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JET PROPULSION LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIFORNIA



# ATTITUDE CONTROL PROPULSION COMPONENTS

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**VOLUME I** 

**NOVEMBER 1974** 

BY



IIT RESEARCH INSTITUTE

Chicago, Illinois

#### FOREWARD

This book was prepared by IIT Research Institute for the Jet Propulsion Laboratory (JPL) under Contract No. 953830, IITRI Project C6309. The project was administered by the Liquid Propulsion Section of JPL. Ms. Maryann Cheny served at Contract Negotiator and Mr. R. K. Baerwald was Technical Manager.

The program was administered by the Information Sciences section of IIT Research Institute under Mr. Peter B. Schipma, Manager. Mr. Alan K. Stewart, Associate Information Scientist, was project leader. Ms. Milda Tamulionis, Assistant Engineer, conducted the survey and Ms. Sharon R. Pyrce, Technical Assistant, extracted and converted data and prepared the various indexes, lists, and summaries.

We are also indebted to the manufacturers and contractors who graciously provided the information in this book. These contributors are credited on their inclusion in the Vendor Directory, Section 6.3, of this book.

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#### I. INTRODUCTION

#### 1.1 Purpose

This catalog is intended to serve as a point of departure for the spacecraft attitude control system designer. It is hoped that the information on flight-qualified hardware contained herein will enable the interested party to determine which components are presently available and how closely these items satisfy anticipated requirements. To this end, every effort has been made to include as much engineering information on each component as possible, consistent with usefulness and catalog size limitations.

#### 1.2 Scope

The contents of this catalog include components which have been qualified for use with spacecraft monopropellant hydrazine and inert gas attitude control systems. Thrust ranges up to 44.5 N (10.0 lbf) for hydrazine and inert gas systems were considered. Additionally, some components qualified for uses other than spacecraft attitude control are included because they are suitable for use in attitude controls systems. Specifically, liquid components are included if they provide for flow equivalent to 0.25 lbm/sec N2H4at 1.0 psid, or if the ESEOD (equivalent square edge orifice diameter) given is less than 0.32 in. For gaseous flow,\* an upper limit equivalent to 450 SCFM N2 (at 20 atmospheres and 60°F) was employed. This limit converts to a maximum flow coefficient, Cy, of 2.55.

<sup>\*</sup> Standard conditions of 60°F and 1 atmosphere were used when reporting data for appropriate components.

Catalog size limitations have restricted the contents to the following items: filters (both gas and liquid), propellant isolation valves, relief valves, gas pressure regulators, fill and vent (manual) valves, hydrazine thrusters, cold gas jet valves, pressure transducers, and temperature transducers.

A comprehensive survey of available spacecraft propellant and pressurant tanks, with engineering data, may be found in the 1974 version of NASA's <u>AEROSPACE TANKS</u> catalog. An abbreviated listing of spacecraft tanks is given in Section 4.1; however, for other possible suitable tanks, the designer should refer to <u>AEROSPACE TANKS</u>.

#### 1.3 Organization

The data sheets for each components are arranged in three basic catagories as follows:

- 1) Propellant Control Subassemblies those components which are typically located upstream of the thruster/ valve assemblies.
- 2) Thruster Valve Assemblies those components which are directly involved in the production or regulation or impulse.
- 3) Transducers pressure and temperature transducers which may have been used at any point in the propulsion subsystem.

Components within each subcategory are ordered according to the increasing value of a primary performance parameter as follows:

Thrust -

Thrusters, Hydrazine

#### Flow -

Valves, Propellant Isolation Valves, Check Valves, Fill and Vent Valves, Hydrazine Thruster Valves, Cold Gas Jet

#### Pressure -

Valves, Relief (Cracking Pressure)
Regulators, Gas Pressure (Regulated Pressure)
Transducers, Pressure (Maximum Operating)

#### Temperature -

Transducers, Temperature (Maximum Measurement)

#### Size -

Filters, Gas (Absolute Micron Rating, Secondarily by Flowrate)
Filters, Liquid (Absolute Micron Rating, Secondarily by Flowrate)

Data for a given component is arranged with primary performance parameters listed in an assumed generally decreasing order of importance to the designer. The absence of information for any entry on the data sheet indicated that the information was not provided by our sources. We have indicated "N/A" only when an entry was definitely determined not to be applicable to the particular component. When thrust or flow information was not provided, data sheets were ordered at the back of the section alphabetically.

The indexes, located in Section 5, provides summaries of selected data for all data sheets and is arranged to facilitate the rapid location of entries. Information has been abbreviated as much as possible to fit in a concise format. Double dashes (--) are used to indicate that the data was not available.

The Component-Ordered Data Summary lists the component, manufacturer, part number, program and data sheet number for each entry. The organization of this summary is first alphabetically by component, within component alphabetically by manufacturer, within manufacturer alphanumerically by part number.

The Manufacturer-Ordered Data Summary lists the manufacturer, part number, prime contractor, component, and data sheet for each entry. The organization of the summary is first alphabetically by manufacturer and within manufacturer alphanumerically by part number.

The Program-Ordered Data Summary lists the program or vehicle on which the component was used, the name of the component, manufacturer, part number, and data sheet number for each entry. Organization of the summary is first alphabetically by program, within program alphabetically by component name, within component alphabetically by manufacturer, and within manufacturer alphanumerically by part number.

Section 6 contains appendixes and general reference matter including a list of abbreviations most frequently used in the catalog; a list of acronyms of the major NASA launches and contractor names; a vendor directory of manufacturers and prime contractors mentioned in Section 4; and two reference lists of bibliographic information concerning the reference numbers cited on data sheets in Section 4.

### 1.4 Updating

1.4.1 Submittal of Additional Data Sheets

Over 170 American manufacturers were contacted and requested

to supply engineering data on relevant components. In spite of the magnitude of this effort, some manufacturers of important components may have been overlooked. Other manufacturers were heavily involved in new proposal efforts and could not afford the time necessary to complete data sheets on each item they manufacture. For these reasons, and because information on new components should be similarly available to all potential users, provisions have been made for adding data sheets to each catalog as that information becomes available.

This section contains a set of blank data sheets identical to those found in Section 4.0. Any manufacturer of a relevant component who would like to include that item in this catalog should duplicate the corresponding data sheet, complete it in as much detail and in the same manner as others found herein, and send it to:

Mr. R. K. Baerwald Liquid Propulsion Section Jet Propulsion Laboratory California Institute of Technology 4800 Oak Grove Drive Pasadena, California 91103.

The data sheets will then be reproduced and distributed to catalog holders by the Jet Propulsion Laboratory. JPL reserves the right to reject for inclusion those data sheets which are either grossly incomplete or not in keeping with the context of the catalog. In either case the data sheet will be returned to the contributor with an explanation of the rejection.

While JPL will bear the expense of reproduction and distribution, it must not be inferred that JPL is liable for expenses incurred by the manufacturer in compiling and completing the submitted data sheets. Additionally, no time schedule for

distribution of accepted data sheets is implied, although the time between acceptance of a data sheet and its distribution will be kept as short as possible.

#### 1.4.2 Distribution

The original catalog distribution list may be found in the front of this catalog. Any catalog holder whose name does not appear on this list but who wishes to be included in update distributions should submit his name and address to Mr. R. K. Baerwald of JPL. Any address on the original distribution list which is incorrect, incomplete, or which will cause delay in the receipt of data sheets should be similarly corrected. Catalog holders should reference their Catalog Number (see cover sheet) in all correspondence.

MANUFACTURER	
PART NUMBER	
	SCALE
	PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ET
PROGRAM	
CONTRACTING AGENCY	
PRIME CONTRACTOR	
OTATILO	
STATUS.	And the second s
QUALIFIED	
QUALIFIED	
QUALIFIED	
QUALIFIED	
QUALIFIED FLOWN LAUNCH VEHICLE	

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.1 FILTER, GAS

TYPE					· · · · · · · · · · · · · · · · · · ·
DESIGN FLOW MEDIA	(		· 	· · · · · · · · · · · · · · · · · · ·	
4					
RATING			MIC	RONS ABSOLUTE	
RATED FLOW @ PRESSURE DIFFERENTIAL					
	(	SCFM of	•	PSID,	_ <sup>o</sup> f)
CAPACITY . MAX. PRESSURE DIFFERENTIAL		gms e	N/cm <sup>2</sup>	( PSID)	
PRESSURES -					
OPERATING		7	(	*	
PROOF					
BURST BURST BURST BURST BURST		<u> </u>	(	······································	
OPERATING TEMPERATURE RANGE		°c	(	<sup>0</sup> F)	
EXTERNAL LEAKAGE		scc/s of	@	N/cm² (e	PSIA)
MATERIAL - CONSTRUCTION					
ELEMENT					
ELLPILA I					
CONNECTION -					
INLET					<del></del> _
OUTLET					
MASS		kg	(	1 bm)	
OTHER SIGNIFICANT CHARACTERISTICS					

MANUFACTURER		_			
PART NUMBER		<del>-</del>			
			SCAL		-
			- JOAL		
		DRAW	PICTORIAL REPR CROSS SECTION, ING, PICTURE,	ESENTATION SCHEMATIC, ENVELOPE, E	TC
PROGRAM					
AANTDAATINA AAENAV					
CONTRACTING AGENCY	<del></del>				
PRIME CONTRACTOR					
STATUS					
QUALIFIED					

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.2 FILTER, LIQUID

TYPE						
DESIGN FLOW MEDIA		:				
RATING	· · · · · · · · · · · · · · · · · · ·		1. 1.	MICRONS ABSOLU	TE	
	L. 184					
RATED FLOW @ PRESSURE DIFFERENTIAL		-				
	(	1bm/sec of_	<del></del>	e PSID, _	oF)	
CAPACITY @ MAX. PRESSURE DIFFERENTIAL		_gms @	I	N/cm <sup>2</sup> (	_ PSID)	
PRESSURES -			•			
OPERATING		N/cm <sup>2</sup>		PSIA)		
PROOF			* . * *	PSIA)		
BURST				PSIA)		
MIN. ELEMENT COLLAPSE DIFFERENTIAL		_		PSIA)		
OPERATING TEMPERATURE RANGE		_°c	(	°F)		
EXTERNAL LEAKAGE		scc/s of	(4)	N/cm <sup>2</sup>	(@ PS	IA)
지경에 많은 생님으로는 데그림이						
MATERIAL -						
CONSTRUCTION	<del></del>					
ELEMENT						
CONNECTION -						
INLET						
OUTLET						
화장, 시작회 실험들이 가는 사이지는 그가 하다.						
(ASS		kg	(,	l bm )		
후 가는 하는 중이 관련 사람들은 시작되었다.						

minute.	
MANUFACTURER	
PART NUMBER	
	생활 등 하는 사람들은 사고 있다면 되었다. 그 등 등 등 기가 하는 1800년 - 1일 등 등 사람들은 1915년 등 등 기가 되었다.
	SCALE
	PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ET
PROGRAM	
PROGRAMCONTRACTING AGENCYPRIME CONTRACTOR	
CONTRACTING AGENCY	
CONTRACTING AGENCY	
CONTRACTING AGENCY PRIME CONTRACTOR	
CONTRACTING AGENCY	

### 4.2.3 VALVE, PROPELLANT ISOLATION

•			
TYPE			
DESIGN FLOW MEDIA			
RATED FLOW AT PRESSURE DIFFERENTIAL			
	(1bm/sec @	PSID,	<sup>o</sup> F)
RESPONSE -			
OPEN		,	
			ET PRESSURE,O
CLOSE			
		( PSIA,	
MINIMUM ELECTRICAL PULSE WIDTH -		1	
TO OPEN			
TO CLOSE	ms @ Vdc	(MAX IMUM)	
OPEN/CLOSED POSITION INDICATION SWITCH		<del></del>	
INTEGRAL FILTER	MICRONS ABSOLUTE		
LIFE	CYCLES		
PRESSURES -			
OPERATING			PSIA)
PROOF			PSIA)
BURST			PSIA)
REVERSE CRACKING			PSIA)
OPERATING TEMPERATURE RANGE	°C	(	°F)
LEAKAGE -		* * * . *	
INTERNAL			
EXTERNAL	scc/s OF	@ N/cm <sup>2</sup>	(PSIA)
SUPPLY VOLTAGE RANGE	Vdc		
POWER	WATTS MAX @	Vdc,	°C (°F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT PROPELLANT FLOW			
DIELECTRIC STRENGTH	mA MAX. CURRENT L	EAKAGE @	VOLTS rms,Hz
INSULATION RESISTANCE	<b>Μ</b> Ω <b>@ V</b>	dc	
MAXIMUM VALVE MAGNETIC FIELD DENSITY -			
ENERGIZED			
DE-ENERGIZED	nT @ l m (	GAMMA @ 6	n)
MATERIAL - CONSTRUCTION			
And the second of the second o			

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.3 VALVE, PROPELLANT ISOLATION continued

CONNECTION -	
INLET	
OUTLET	
ELECTRICAL	
LAUNCH ENVIRONMENT - RANDOM VIBRATION -	
WIDE BAND LEVEL	Gras Constant of the control of the
MAX POWER SPECTRAL DENSITY	G <sup>2</sup> /Hz from to Hz
SINUSOIDAL VIBRATION -	
SWEEP RATE	OCTAVES/min
MAX G LEVEL (O-PEAK)	ATHz
	ATHz
	AT Hz
ACOUSTIC VIBRATION -	
OVERALL SOUND PRESSURE LEVEL	dB FOR MINUTES
SHOCK RESPONSE -	
WAVE FORM PEAK-LEVEL OF	G's FORsec
SHOCK SPECTRUM-PEAK RESPONSE OF	G's AT Hz
AMPLIFICATION FACTOR (Q)	
STATIC ACCELERATION	
MASS	kg (1bm)
OTHER SIGNIFICANT CHARACTERISTICS	보고 있으는 어떤 사람들은 승규는 어떻게 다음

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.4 VALVE, RELIEF MANUFACTURER PART NUMBER \_ SCALE PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.) PROGRAM............ CONTRACTING AGENCY..... PRIME CONTRACTOR..... **STATUS** QUALIFIED..... FLOWN.............. LAUNCH VEHICLE..... AVAILABILITY..........

COST/PROCUREMENT INFORMATION...

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.4 VALVE, RELIEF

TYPE:			
DESIGN FLOW MEDIA			
CRACKING PRESSURE	N/cm <sup>2</sup>	<del>(</del> -	PSIA)
RESEAT PRESSURE	N/cm <sup>2</sup>	(_	PSIA)
RATED FLOW AT PRESSURE DIFFERENTIAL			
	SCFM @	PSID,	°F)
BURST DIAPHRAGM RUPTURE PRESSURE	N/cm <sup>2</sup>	(_	PSID)
LIFE - CALLED TO BE AND THE STATE OF THE STA			
BURST DIAPHRAGM	CYCLES AT ZERO TO	)	TO ZERO N/cm <sup>2</sup>
	(ZERO TO	0	_ TO ZERO PSIA)
VALVE	CYCLES		
PROOF PRESSURE	N/cm <sup>2</sup>	(_	PSIA)
BURST PRESSURE	N/cm <sup>2</sup>	(_	PSIA)
OPERATING TEMPERATURE RANGE	o <sub>C</sub>	( <u> </u>	°F)
in a series de la companya de la co Leakage - la companya de la companya			
INTERNAL	scc/hr OF	iù	N/cm <sup>2</sup>
			PSIA)
BURST DIAPHRAGM	scc/s OF	w	N/cm <sup>2</sup>
한 발표를 받았는데 보고 말로 보안했다.			PSIA)
EXTERNAL	scc/s OF		
신경 그녀를 이 하뉴션, 현리와 교육인 등 교회의		(	PSIA)
MATERIAL - CONSTRUCTION			
SEAT			
CONNECTIONS -	보고 말하는 것 같아 되었다. 그는 것 		
INLET			
OUTLET			
MSS	kg (_		lbm)

MANUFACTURER	
PART NUMBER	
	인 보통은 일보는 여러 보고 있는데 모르는 이름이다.
	SCALE
	PLATABLAL DERDESENTATION
	PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC,
화경 경기 회사 기가 가는 그리고 있다.	DRAWING, PICTURE, ENVELOPE, ETC.
PROGRAM	
PROGRAM	
CONTRACTING AGENCY	
CONTRACTING AGENCYPRIME CONTRACTOR	
CONTRACTING AGENCY	
CONTRACTING AGENCY	
CONTRACTING AGENCY	
FLOWN	



# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.5 VALVE, CHECK

TYPE				. (
DESIGN FLOW MEDIA				-
RATED FLOW AT DIFFERENTIAL PRESSURE -				
NOMINAL				:
	(SCFM @			
EMERGENCY				
	(SCFM e	PSID,	•F)	
CRACKING PRESSURE	N/cm <sup>2</sup>	(	PSIA)	
RESEAT PRESSURE	M/cm <sup>2</sup>	(	PS (A)	
LIFE	CYCLES			
PROOF PRESSURE	N/cm <sup>2</sup>	(	PSIA)	
SURGE PRESSURE			TE OFN/(cm <sup>2</sup> -s	100
BURST PRESSURE	N/cm <sup>2</sup>	( <del></del>	PSIA)	
DPERATING TEMPERATURE RANGE	°c	(	o <sub>F</sub> )	
LEAKAGE -				
INTERNAL	scc/hr of		N/cm <sup>2</sup>	
		(	PSIA)	
EXTERNAL	scc/s of	@	N/cm <sup>2</sup>	
		(	PSIA)	
AATERIAL - CONSTRUCTION				
SEAT				
ONNECTIONS -				
INLET		<u> </u>		_
OUTLET				
MASS	kg		1 bm)	
THER SIGNIFICANT CHARACTERISTICS				

MANUFACTURER	
PART NUMBER	
	SCALE
	PICTORIAL REPRESENTATION
	(CROSS SECTION, SCHEMATIC,
	DRAWING, PICTURE, ENVELOPE, ETC.
PROGRAM	
CONTRACTING AGENCY	
보고를 하는 그리고 있다는 그램을 하는 다음을 모르게 되었다.	and the first of the second of the first of the second
PRIME CONTRACTOR	
STATUS	
STATUS QUALIFIED	
STATUS  QUALIFIED  FLOWN	
STATUS  QUALIFIED	
FLOWN	

### 4.2.6 REGULATOR, GAS PRESSURE

TYPE	- Walter V					<del>-</del> :
DESIGN FLOW MEDIA				: 		<b>-</b>
INLET PRESSURE RANGE		N/cm <sup>2</sup>	. (	(	PSIA)	
REGULATED OUTLET PRESSURE		N	I/cm <sup>2</sup>	•	scc/s FLOW RATE	RANGE
	(	±P	SIA	•	_ scf/m FLOW RATE	RANGE)
FLOW RATE RANGE	-	scc/s e		N/cm <sup>2</sup>	INLET PRESSURE RA	NGE
		SCFM e		PSIA	INLET PRESSURE RAN	IGE)
OUTLET LOCKUP PRESSURE		N/cm <sup>2</sup>	-14 july 1	(	PSIA)	
DYNAMIC PERFORMANCE -						
MAX. INLET PRESSURE CHANGE RATE		N/cm <sup>2</sup> /Min	. (	(	PSIA/Min)	
MAX. REGULATED PRESSURE OSCILLATION .	<u>±</u>	N/cm2 OVER		N/cm <sup>2</sup> INLET	PRESSURE RANGE	
	( <u>±</u>	PSIA OVER	(	PSIA INLET	PRESSURE RANGE)	
LIFE		. CYCLES				
PRESSURES, INLET -					garah da kacamatan d	
PROOF		N/cm <sup>2</sup>		(	PSIA)	
BURST		_		(	PSIA)	
PRESSURES, OUTLET -						
PROOF		N/cm <sup>2</sup>		(	PSIA)	
BURST		N/cm <sup>2</sup>	(	(	PS IA)	
OPERATING TEMPERATURE RANGE		.°c		(	°F)	
LEAKAGE -						
INTERNAL	<u> </u>	scc/hr OF			N/cm <sup>2</sup>	
				(	PSIA)	
EXTERNAL		scc/s OF		<b>9</b>	N/cm <sup>2</sup>	
				(	PSIA)	
MATERIAL -						
CONSTRUCTION						
SEAT			<del></del>			
CONNECTION -						
INLET						
OUTLET		The second state of the se	eg i di di ili Perga <del>ran</del>			
MASS		_ kg			l bm)	
보고 보고 있다면 살아 있는데 그렇게 하는데 하는데 되었다.						
THER SIGNIFICANT CHARACTERISTICS		수를 된 눈았다고 하지만 각			inamur alanya 1966 i	

MANUEACTURER			
MANUFACTURER _			
PART NUMBER			
		SCALE	
		PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, E	TC
PROGRAM			
CONTRACTING AGE	NCY		
PRIME CONTRACTO		되는 사람들은 사람이 하실 사람들이 살 때문에 가는 가는 것이다.	
PRIME CONTRACTO		화가의 소리를 잃어 이번 생각을 받는 경우를 하셨다고 있다.	
PRIME CONTRACTO		등 (1) 회사 (1) 보고 있다는 이 사람들이 되는 함께 이렇게 되었다. 40 대한 전에 대한 시간에 대한 기를 받는 것이 되었다. 1 후 1 시간 (1) 등 1 등 1 등 1 등 1 등 1 등 1 등 1 등 1 등 1 등	
STATUS			
STATUS  QUALIFIED  FLOWN			
STATUS  QUALIFIED  FLOWN			
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STATUS  QUALIFIED  FLOWN  LAUNCH VEHIC			
STATUS  QUALIFIED  FLOWN  LAUNCH VEHIC  AVAILABILITY	LE		

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.7 VALVE, FILL AND VENT

TYPE				
DESIGN FLOW MEDIA				
RATED FLOW AT DIFFERENTIAL PRESSURE (ACROSS BOTH FLIGHT AND GROUND HALVES IN EITHER DIRECTION) -				
LIGUID	kg/sec (	OF @ _	N/cm <sup>2</sup> ,	oc
	(lbm/sec (			
GAS				
	( SCFM OF_		PSID,	oF)
INTEGRAL FILTRATION	MICRO	ONS ABSOLUTE		
LIFE	CYCLE	ES		
PRESSURES - OPERATING	N l'omâ	2	( PS	CIA\
PROOF			(PS	
BURST		_	(PS	
OPERATING TEMPERATURE RANGE	oc		(o <sub>I</sub>	F).
LEAKAGE -				
INTERNAL	scc/hr 0i	F. W	N/cm <sup>2</sup>	
			PSIA)	
EXTERNAL	scc/s OF			
			PSIA)	
MATERIAL -				
CONSTRUCTION				
SEAT				
CONNECTIONS -				
DESCRIPTION OF GROUND HALF				
SPACECRAFT CONNECTION				
4498 (FLIGHT HALF ONLY)	kg (	1 bn	n)	
OTHER SIGNIFICANT CHARACTERISTICS				

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.3.1 THRUSTER, HYDRAZINE

PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  VALVE MANUFACTURER.  PART NUMBER  PART NUMBER  PART NUMBER  PART NUMBER  PART NUMBER  PRESSURE TRANSDUCER  PART NUMBER  PROGRAM.  CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS QUALIFIED  FLOWN  LAUNCH VEHICLE		
PART NUMBER  PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  VALVE MANUFACTURER.  PART NUMBER  PART NUMBER  PART NUMBER  PRESSURE TRANSDUCER  PRESSURE TRANSDUCER  PRESSURE TRANSDUCER  PROGRAM.  CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS QUALIFIED  FLOWN  LAUNCH VEHICLE  VAAILABILITY	MANNEACTIOED	
PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  VALVE MANUFACTURER.  PART NUMBER  PART NUMBER  PART NUMBER  PART NUMBER  PART NUMBER  PRESSURE TRANSDUCER  PART NUMBER  PROGRAM.  CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS QUALIFIED  FLOWN  LAUNCH VEHICLE	MARUFACIURER	
PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  VALVE MANUFACTURER.  PART NUMBER  PART NUMBER  PART NUMBER  PART NUMBER  PRESSURE TRANSDUCER  PART NUMBER  PROGRAM.  CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS QUALIFIED  FLOWN  LAUNCH VEHICLE		
PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  VALVE MANUFACTURER.  PART NUMBER  PART NUMBER  PART NUMBER  PRESSURE TRANSDUCER  PART NUMBER  PRESSURE TRANSDUCER  PART NUMBER  PROGRAM.  CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE		
PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  VALVE MANUFACTURER.  PART NUMBER  PART NUMBER  PART NUMBER  PART NUMBER  PART NUMBER  PRESSURE TRANSDUCER  PART NUMBER  PROGRAM.  CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS QUALIFIED  FLOWN  LAUNCH VEHICLE	PART NUMBER	
PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  VALVE MANUFACTURER.  PART NUMBER  PART NUMBER  PART NUMBER  PART NUMBER  PART NUMBER  PART NUMBER  POGRAM.  CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS QUALIFIED  FLOWN  LAUNCH VEHICLE		
PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  VALVE MANUFACTURER.  PART NUMBER  PART NUMBER  PART NUMBER  PART NUMBER  PART NUMBER  PART NUMBER  POGRAM.  CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS QUALIFIED  FLOWN  LAUNCH VEHICLE		
PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  VALVE MANUFACTURER.  PART NUMBER  PART NUMBER  PART NUMBER  PART NUMBER  PART NUMBER  PART NUMBER  POGRAM.  CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS QUALIFIED  FLOWN  LAUNCH VEHICLE		SCALE
(CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  VALVE MANUFACTURER. PART NUMBER  HEATER MANUFACTURERS. PART NUMBER  PRESSURE TRANSDUCER PART NUMBER  PROGRAM. PART NUMBER  CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE  AVAILABILITY		
(CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  VALVE MANUFACTURER. PART NUMBER  HEATER MANUFACTURERS. PART NUMBER  PRESSURE TRANSDUCER PART NUMBER  PROGRAM. PART NUMBER  CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE		PICTORIAL REPRESENTATION
VALVE MANUFACTURER		(CROSS SECTION, SCHEMATIC,
HEATER MANUFACTURERS  SENSOR MANUFACTURERS  TEMPERATURE TRANSDUCER  PRESSURE TRANSDUCER  PROGRAM  CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE		DRAWING, FIGURE, ENVELOPE, ETC.)
HEATER MANUFACTURERS  SENSOR MANUFACTURERS  TEMPERATURE TRANSDUCER  PRESSURE TRANSDUCER  PROGRAM  CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE	VALVE MANUFACTURER	PART NUMBER
SENSOR MANUFACTURERS  TEMPERATURE TRANSDUCER  PRESSURE TRANSDUCER  PROGRAM  CONTRACTING AGENCY  STATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE  AVAILABILITY		
TEMPERATURE TRANSDUCER PART NUMBER PRESSURE TRANSDUCER PART NUMBER  PROGRAM.  CONTRACTING AGENCY PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE  AVAILABILITY		NADMUN I NA I
PRESSURE TRANSDUCER PART NUMBER  PROGRAM	SENSOR MANUFACTURERS	PART NIIMRFR
PROGRAM  CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE		
PRIME CONTRACTOR	PROGRAM	
PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE		
STATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE		
QUALIFIED	성병 (L.M. 아이 Let Let # 1982) 그는 사용이 사용했습니다.	
FLOWNLAUNCH VEHICLE	STATUS OUALIFIED	
AVAILABILITY	하는 사람들은 그 사람들은 사람들이 되었다. 그 사람들은 사람들은 사람들은 사람들은 사람들이 되었다.	
되는 보이노 보는 일반이 되었다. 그리다 문화 나라, 중에 가장 내용 기능을 받는 사람들에 모양하는 사람들이 되었다.	LAUNCH VEHICLE	
OST/PROCUREMENT INFORMATION	AVAILABILITY	
	COST/PROCUREMENT INFORMATION	
보고 있다. 그는 이 보고 있는 것이 되었다. 그는 이 이 이 이 이 이 아이들은 그는 사람들은 그를 보고 되었다. 그는 것이 되는 것이 없는 것이 있다. 그는 그들은 사람들은 사람들은 사람들은 이 이 이 이 이 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은		
,我们就是一个人,我们就是一个人,她们就是一个女人的时候,我们就是这些人,这一个女人的女人,我们就是一个女人的女人的女人,这样的女人,我们不会一个女人的女人,不		

### 4.3.1 THRUSTER, HYDRAZINE

PROPELLANT					···	<del></del>
VACUUM THRUST RANGE		N	(		_lbf)	
INLET PRESSURE RANGE	***************************************	11/cm <sup>2</sup>	(		PSIA)	
INLET TEMPERATURE RANGE		oc	(		o <sub>F</sub> )	The second control of
MINIMUM IMPULSE BIT			-			CATALYST BED TE
	1	lh-sec @	PC	ı A	OF CATA	IVST RED TEMP\
IMPULSE BIT REPEATABILITY @		N/cm <sup>2</sup>	1	PSIA	L INIET P	DESCRIBE:
ILLIOCOC BILL WELLYHOUTELING &	30 REI	PEATABILITY	· · · · · · · · · · · · · · · · · · ·	PULSE	NUMBER	NESSURE:
		<b>%</b>		·		
		%				
	+	%		****		
CENTROID LOCATION REPEATABILITY FORse	C VALVE	OH-TIME:				
	3 <b>♂</b> REI	PEATABILITY		PULSE	NUMBER	
		%		-		
		<b>%</b>		No. of 177 games	<del></del>	
CHAMBER PRESSURE ROUGHNESS	<u> </u>	//				
RESPONSE -						
TIME FROM VALVE-ON SIGNAL TO 90% STEADY STA	TE Pc:	s	sec			
TIME FROM VALVE-OFF SIGNAL TO 10% STEADY ST	ATE Pc:	\$	ec			
STEADY STATE VACUUM SPECIFIC IMPULSE		N-sec	kg	(	1b <sub>f</sub> -s	ec/1bm)
LIFE -						mar Table 1
TOTAL IMPULSE	ini Vilani	N-sec	;	(	lbs	ec)
TOTAL THROUGHPUT		kg		(	1bm)	
TOTAL NUMBER OF COLD STARTS		0		c (		<sup>o</sup> F)
TOTAL NUMBER OF PULSES.,	· <del></del>					
STEADY STATE DUTY CYCLE -						
TOTAL OH-TIME		sec				
MAXIMUM ON-TIME		sec				
PULSE MODE DUTY CYCLE -						
TEMPERATURE AT START OF PULSE TRAIN		oc			o <sub>f</sub>	
HOMINAL PULSE TRAIN LENGTH		PULSE	S	\		
NOMINAL ON-TIME(S)		sec				
MOMINAL OFF-TIME(S)		sec				
그는 사람들은 가는 얼마들만 하다고 하는 것 같은 것 같은 것이 없다면 하는 사람들이 되었다.						

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.3.1 THRUSTER, HYDRAZINE continued

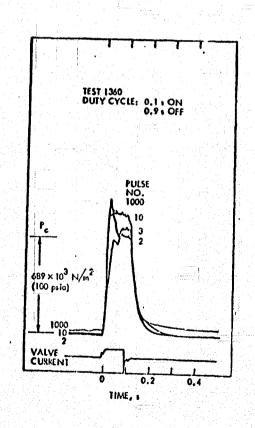
LAUNCH ENVIRONMENT - RANDOM VIBRATION -		
WIDE BAND LEVEL		
MAX POWER SPECTRAL DENSITY		
SINUSOIDAL VIBRATION -		
SWEEP RATE	OCTAVES/min	
MAX G LEVEL (O-PEAK)		
	AT Hz	
	AT Hz	
ACOUSTIC VIBRATION -		
OVERALL SOUND PRESSURE LEVEL	AD EAD MANUTES	
	CD FOR MINUIES	
SHOCK RESPONSE -	Cla FOD	
WAVE FORM PEAK-LEVEL OF		
SHOCK SPECTRUM-PEAK RESPONSE OF		
AMPLIFICATION FACTOR (Q)		
STATIC ACCELERATION	6's	
INJECTOR -		
PATTERN OF PROPELLANT DISTRIBUTION		
INJECTOR PRESSURE DROP AT FLOW RATE	N/cm <sup>2</sup> @ k	g/sec
	PSID @1b	
CATALYST -		
TYPE		
PELLET SIZE(S)		
DETENTION TECHNIQUE	on the magnification of the father than the first than the first term of the first	
RETENTION TECHNIQUE		
BED DIAMETER	cm (in)	
BED DIAMETER BED LENGTH	cm (in) cm (in)	2
BED DIAMETER BED LENGTH	cm (in)	ec/in <sup>2</sup> )
BED DIAMETER	cm (in) cm (in)	ec/in <sup>2</sup> )
BED DIAMETER  BED LENGTH  BED LOADING	cm (in)cm (in)kg/sec/cm <sup>2</sup> (1bm/s	ec/in <sup>2</sup> )
BED DIAMETER  BED LENGTH  BED LOADING  HEATER -  NOMINAL SUPPLY VOLTAGE	cm (in)cm (in)kg/sec/cm <sup>2</sup> (1bm/s	
BED DIAMETER  BED LENGTH  BED LOADING  HEATER -  NOMINAL SUPPLY VOLTAGE	cm (in)cm (in)kg/sec/cm <sup>2</sup> (1bm/s	
BED DIAMETER  BED LENGTH  BED LOADING  HEATER -  NOMINAL SUPPLY VOLTAGE  MAXIMUM POWER  CATALYST BED TEMPERATURE	cm (in)cm (in)kg/sec/cm <sup>2</sup> (1bm/sVdc,WATTS @Vdc,°C (	°F)
BED DIAMETER  BED LENGTH  BED LOADING  HEATER -  NOMINAL SUPPLY VOLTAGE  MAXIMUM POWER  CATALYST BED TEMPERATURE  VALVE -	cm (in)cm (in)kg/sec/cm <sup>2</sup> (1bm/sVdc,WATTS @Vdc,°C (	°F)
BED DIAMETER  BED LENGTH  BED LOADING  HEATER -  NOMINAL SUPPLY VOLTAGE  MAXIMUM POWER  CATALYST BED TEMPERATURE	cm (in)cm (in)kg/sec/cm <sup>2</sup> (1bm/sVdc,WATTS @Vdc,°C (	°F)
BED DIAMETER  BED LENGTH  BED LOADING  HEATER -  NOMINAL SUPPLY VOLTAGE  MAXIMUM POWER  CATALYST BED TEMPERATURE  VALVE -  THRUSTER-VALVE INTERFACE DESCRIPTION	cm (in)cm (in)kg/sec/cm <sup>2</sup> (ibm/sVdc,WATTS @Vdc,°C (	°F)
BED DIAMETER  BED LENGTH  BED LOADING  HEATER -  NOMINAL SUPPLY VOLTAGE  MAXIMUM POWER  CATALYST BED TEMPERATURE  VALVE -  THRUSTER-VALVE INTERFACE DESCRIPTION  PROOF PRESSURE	cm (in)cm (in) _kg/sec/cm <sup>2</sup> (ibm/sVdc,WATTS @Vdc,oC (oC (	o <sub>F</sub> )
BED DIAMETER  BED LENGTH  BED LOADING  HEATER -  NOMINAL SUPPLY VOLTAGE  MAXIMUM POWER  CATALYST BED TEMPERATURE  VALVE -	cm (in)cm (in)kg/sec/cm² (lbm/sVdc,Vdc,vcc (	OF)PS(A)PS(A)

### 4.3.1 THRUSTER, HYDRAZINE continued

OTHER SIGNIFICANT CHARACTERISTICS			
OTHER		ka (	1 bm)
WITHOUT VALVE	· · · · · · <u> </u>	_ kg (	1 bm)
WITH VALVE	• • • • • • • • • • • • • • • • • • • •	_ kg(	1 bm)
MASS -			
CATALYST RETAINER	• • • • • • • • • • • • • • • • • • • •		
STANDOFF			
CHAMBER	• • • • • • • • • • • • • • • • • • • •		
MATERIAL -			

Pulsing
Specific
Impulse
vs
Pulse Number

Impulse Bit
vs
Pulse Number



Typical Pulse Trace

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.3.2 VALVE, HYDRAZINE THRUSTER

MANUFACTURER	
PART NUMBER	
	SCALE
	PICTORIAL REPRESENTATION
	(CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)
	DRAWING, PICTURE, ENVELOPE, ETC.)
PROGRAM	
CONTRACTING AGENCY	
PRIME CONTRACTOR	
STATUS	
QUALIFIED	
FLOWN	en de la region de la companya de l La companya de la co
LAUNCH VEHICLE	
	경기 경기 : - 이 경기 :
AVAILABILITY	
	가 있는 것이 되었습니다. 그 전에 되었다는 것이 있는 것이 되는 것이 되었습니다. 그런 그렇게 함께 되었습니다. 
COST/PROCUREMENT INFORMATION	
	이 보고 있는 것이 아는 것이다. 그 보고 있는 하는 것이 되었다면 한 것을 하는 것이다. 기계 기계 기계 기계 기계 기계 기계 기계를 보고 있는 것이 되었다.
그 문법, 음악으로 다른데 많은 성환에 본에 되어 나왔다.	네

### 4.3.2 VALVE, HYDRAZINE THRUSTER

Mode	TYPE	-				
RATED FLOW AT PRESSURE DIFFERENTIAL	USED WITH THRUSTER					<del></del>
(	DESIGN FLOW MEDIA					:
(	RATED FLOW AT PRESSURE DIFFERENTIAL		_ kg/sec @	N/cm <sup>2</sup> , _	°c	
OPEN         ms @					_	
(	RESPONSE TIME -					
CLOSE       ms #Vdc,N/cm²,°C         (PSIA°F)         LIFE      CYCLES         INTEGRAL FILTRATION       MICRONS ABSOLUTE         PRESSURES -	OPEN	ms	@ Vdc,	N/cm <sup>2</sup> INI	ET PRESSURE	°c
CYCLES						o <sub>F</sub>
LIFE	CLOSE	ms				
INTEGRAL FILTRATION				PSIA	°F)	
PRESSURES -         OPERATING INLET RANGE         N/cm²         (	LIFE	<del></del>	CYCLES			
OPERATING INLET RANGE         N/cm²         (PSIA)           PROOF         N/cm²         (PSIA)           BURST         N/cm²         (PSIA)           OPERATING TEMPERATURE RANGE         °C         (PSIA)           LEAKAGE -         INTERNAL         scc/hr OF @N/cm²           EXTERNAL         scc/s OF @N/cm²           EXTERNAL         scc/s OF @N/cm²           SUPPLY VOLTAGE RANGE         Vdc           POWER REQUIREMENTS         WATTS @Vdc,°C (°F)           DIELECTRIC STRENGTH	INTEGRAL FILTRATION		MICRONS ABSOLU	ITE		
PROOF	PRESSURES -					
BURST	OPERATING INLET RANGE		N/cm <sup>2</sup>	(		
BURST	PROOF		N/cm <sup>2</sup>	(	PSIA)	
SEC/hr OF	BURST		N/cm <sup>2</sup>	(	PSIA)	
SCC/hr OF   @   M/cm²	OPERATING TEMPERATURE RANGE		°C	(	°F)	
INTERNAL	LEAKAGE -					
SCC/S OF   @   N/cm²	INTERNAL		scc/hr OF	@	N/cm <sup>2</sup>	
(PSIA)   SUPPLY VOLTAGE RANGE						
SUPPLY VOLTAGE RANGE	EXTERNAL		scc/s OF	@	N/cm <sup>2</sup>	
POWER REQUIREMENTS				(	PSIA)	
MAXIMUM CURRENT LEAKAGE   WOLTS rms,	SUPPLY VOLTAGE RANGE		. Vdc			
MAXIMUM CURRENT LEAKAGE   WOLTS rms,	POWER REQUIREMENTS		WATTS @	Vdc,	°c (	°F)
VOLTS rms,			and the second s	and the second of the second of		
MAX. VALVE MAGNETIC FIELD DENSITY -  ENERGIZED						
MAX. VALVE MAGNETIC FIELD DENSITY -  ENERGIZED	INSULATION RESISTANCE		MΩ @	Vdc		
ENERGIZED	경찰 후 고기보기 없는 것 같은 생님이 살길이 있을까요?					
DE-ENERGIZED	그러지 않는 사람들이 살아보고 있다면 하는 것이 되었다. 그는 그는 그리고 살아왔다면 그 사람들이 없다.		nT@im(	GAMMA	@ 6 in)	
CONSTRUCTION						
CONSTRUCTION						
SEATSkg (lbm)						
하는 마리토토 보호되어서 호텔이 나가고 들어가 들어져지는데, 이 생생님 그릇 생명하면 된 나무없고 되었다. 그렇게 화가 유리를 받아보는 나다.						
하는 마리토토 보호되어서 호텔이 나가고 들어가 들어져지는데, 이 생생님 그릇 생명하면 된 나무없고 되었다. 그렇게 화가 유리를 받아보는 나다.	MASS		ka		1 bm)	
	현물시간 발표가 고프로 하시다면 가지 그리고 그리고 하네다.	민준민 회사회상				

	ran arang kanang ang kanang at Marangan Nagarah Banagan kanang at kanangan ang kanangan ang Kanangan Angarah K
MANUFACTURER	
MANUFACTURER	
PART NUMBER	
	SCALE
	PICTORIAL REPRESENTATION
	(CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ET
	그리고 하게 되는 이번에는 이번 이번에 보는 사람들이 되었다. 이번에 가는 사람들은 모든
PROGRAM	
PROGRAM  CONTRACTING AGENCY	
CONTRACTING AGENCY  PRIME CONTRACTOR	
CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS	
CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS  QUALIFIED	
CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN	
CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS  QUALIFIED	
CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN	
CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE	

4.3.3 VALVE, COLD GAS JET

PROPELLANT			
ACUUM THRUST RANGE	<b>*</b>	<u> (</u>	1b <sub>f</sub> )
NLET PRESSURE RANGE	N/cm <sup>2</sup>		PS (A)
INLET TEMPERATURE RANGE	°C	· ( <u></u>	°F)
RATED FLOW AT PRESSURE DIFFERENTIAL	scc/s e	1/cm <sup>2</sup> ,	°c
	C SCFM @	PSID,	°F)
ESPONSE -			
UPEN			
	The state of the s	_ PSIA INLET PRESS	
CLOSE			
		PSIA,o	r)
IIN. COMMANDED PULSE WIDTH SIGNAL ON TO SIGNAL OFF)	ms		
IFE			
	AND THE STATE OF T		
PROOF	N/cm <sup>2</sup>		PSIA)
BURST	and the state of t	\(\frac{1}{2} \)	
EAKAGE - 1			
INTERNAL	scc/HR OF	N/cm <sup>2</sup> (_	PSIA)
EXTERNAL			
	Vdc		
OWER REQUIREMENTS		°c (	o <sub>F</sub> )
ELECTRIC STRENGTH			
NSULATION RESISTANCE			
	Mara Tac		
AXIMUM VALVE MAGNETIC FIELD DENSITY -	nT @ I m (GAMMA @ 6 in		
DE-ENERGIZED	nT @ I m (GAMMA @ 6 in		
DZZLE	REMOVABLE FROM VALVE		
	INTEGRAL WITH VALVE		
OZŽLE AREA RATIO			
[편] 그 그는 모든 말을 입니다. 공연하다			
TERIALS - CONSTRUCTION			
SEATS			
NNECTIONS -			
ELECTRICAL			
ISS	kg		1 bm)
THED SIGNIEIPANT CHADACTEDICTICS	1-29		

ART NUMBER  PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  ROGRAM	4.4.1 TRANSDUCER, PRESSURE	
ART NUMBER  SCALE  PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  ROGRAM  DITTACTING AGENCY  TATUS QUALIFIED  FLOWN  LAUNCH VEHICLE		
ART NUMBER  SCALE  PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  ROGRAM  DITTACTING AGENCY  TATUS QUALIFIED  FLOWN  LAUNCH VEHICLE		
PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  ROGRAM	MANUFACTURER	
PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  ROGRAM		
PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  ROGRAM		
PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  ROGRAM		
PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  ROGRAM.  DINTRACTING AGENCY.  TATUS  QUALIFIED.  FLOWN.  LAUNCH VEHICLE.	PART NUMBER	
PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  ROGRAM.  DINTRACTING AGENCY.  TATUS  QUALIFIED.  FLOWN.  LAUNCH VEHICLE.		
PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  ROGRAM.  DINTRACTING AGENCY.  TATUS  QUALIFIED.  FLOWN.  LAUNCH VEHICLE.		
(CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  ROGRAM		SCALE
(CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  ROGRAM		
(CROSS SECTION, SCHEMATIC, DRAWING, PICTURE, ENVELOPE, ETC.)  ROGRAM	하는 얼마 하는 사람들은 사람이다.	PICTORIAL REPRESENTATION
ROGRAM  DITTACTING AGENCY  RIME CONTRACTOR  TATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE		(CROSS SECTION, SCHEMATIC,
DNTRACTING AGENCY  RIME CONTRACTOR  TATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE		DRAWING, PICTURE, ENVELOPE, ETC.)
DNTRACTING AGENCY  RIME CONTRACTOR  TATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE		
DNTRACTING AGENCY  RIME CONTRACTOR  TATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE	PROGRAM	
FATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE		[[일]] [[[[ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [
TATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE  /AILABILITY	CONTRACTING AGENCY	
TATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE  /AILABILITY		
QUALIFIED  FLOWN  LAUNCH VEHICLE  /AILABILITY	PRIME CONTRACTOR	
QUALIFIED  FLOWN  LAUNCH VEHICLE  /AILABILITY	기가 통해 기계에 가고 있는 의하는 그는 것이다. 1941년 대한 기계	
FLOWNLAUNCH VEHICLE	STATUS	하는 사람들의 시간 중요 전략 전환 사람들은 기술을 받았다.
LAUNCH VEHICLE		
AILABILITY	FLOWN	
[1] 마마마마 이 15 15 15 15 15 15 15 15 15 15 15 15 15	LAUNCH VEHICLE	가는 사람들이 되는 것이 되었다. 그는 것이 되었다면 하는 것이 되었다. 그는 것이 되는 것이 되었다면 하는 것이 되었다면 것이 되었다면 하는 것이 되었다면 하는 것이 되었다
[1] 마마마마 이 15 15 15 15 15 15 15 15 15 15 15 15 15		- 발매하다 하는 그는 시간 사람이 발생하다는 물 생각 수 있다는 것으로 들었다. 
ST/PROCUREMENT INFORMATION	AVAILABILITY	
OST/PROCUREMENT INFORMATION	물보, 종화 중 아름답을 되고 인했다.	가는 보고 있는데 보고 있는데 보고 있는데 하는데 보고 있는데 되었다. 보고 있는데 보고 있는데 보고 있는데 보고 있는데 보고 있는데 되었다.
rger gang tit menganggang perantahan ang penggan ang ang penggan penggan beranggan penggan penggan di dalam pen	COST/PROCUREMENT INFORMATION	
우리 보는 사람이 보면 가는 이번 하는 것이 되는 것이 되는 것이 되었다. 그는 것이 되었다면 하는 것이 되었다면 되었다. 그는 것이 되었다면 하는 것이 되었다면 되었다면 되었다면 되었다면 되었다면 하는데 보다면 되었다면 되었다면 되었다면 되었다면 되었다면 되었다면 되었다면 되었	달라이는 사람은 말로 다른 하라고 된다.	
사용하는 경우 등에 가장 경우를 받는다면 하는데 보고 있는데 보는 것이 되었다. 그런데 보고 있는데 보고 있는데 보고 있다. 사용하는데 보고 있는데 보고 있는데 하는데 하는데 보고 있는데 되었다.	분들로 보통하는 중로 발표 발표 학교 <sup>학</sup>	
마음에 가는 사람들이 되었다. 이 경우를 다른 사람들이 되었다. 그런 그런 그들은 그들은 사람들이 되었다. 그런 그런 그런 그는 그는 사람들이 되었다. 그런 사람들이 그런 그런 그런 그런 그런 그런 		

### 4.4.1 TRANSDUCER, PRESSURE

OPERATING PRINCIPLE		
DESIGN USE	the state of the s	
OPERATING PRESSURE RANGE	N/cm <sup>2</sup> (	PSIA)
OPERATING TEMPERATURE RANGE	<u>°</u> c (	_°F)
OUTPUT VOLTAGE RANGE	Vdc	
TIME CONSTANT	sec	
DEAD VOLUME	cm <sup>3</sup>	_in <sup>3</sup> )
THERMAL SENSITIVITY SHIFT	± % OF FULL SCALE/°C	
THERMAL ZERO SHIFT	± % OF FULL SCALE/°C	
LINEARITY	± % OF FULL SCALE	
HYSTERESIS	± % OF FULL SCALE	
REPEATABILITY	± % OF FULL SCALE	
ACCELERATION ERROR	% OF FULL SCALE/G	
VIBRATION ERROR	% OF FULL SCALE/G	
LIFE	CYCLES	
SUPPLY VOLTAGE RANGE	VOLTS dc	
SUPPLY CURRENT RANGE	AMPERES	
INSULATION RESISTANCE	Vdc	
OUTPUT IMPEDENCE	Ohms	
OUTPUT REGULATION	% CHANGE IN OUTPUT OVER THE FULL RANGE OF INPUT VOLTAGE	
PROOF PRESSURE	N/cm <sup>2</sup>	_ PSIA)
BURST PRESSURE	N/cm <sup>2</sup>	PSIA)
EXTERNAL LEAKAGE	scc/s OF @N/cm <sup>2</sup>	
	PSIA)	
MATERIALS		
MOUNTING PROVISIONS	가 있는 것 같아 있다. 그런데 이번 살을 들는 이 사람들이 되었다. 그런데 하는 것이 되었다는 것이다. 그는 사람들이 많아 하는 것 같아 하는 것이 되는 것이 되었다.	
CONNECTIONS -		
PRESSURE		
MASS	k <b>ý</b>	1 bm
ACUED CLONICICANT GUADACTEDICTICS	물론이 되는 바람이 그렇게 없었다는 하는데 되는 그 사람이 되는데 얼마나	

MANUFACTURER	
DADT NUMBER	
PART NUMBER	
	SCALE
	PICTORIAL REPRESENTATION (CROSS SECTION, SCHEMATIC,
	DRAWING, PICTURE, ENVELOPE, ET
PROGRAM	DRAWING, PICTURE, ENVELOPE, ET
	DRAWING, PICTURE, ENVELOPE, ET
	DRAWING, PICTURE, ENVELOPE, ET
CONTRACTING AGENCY	DRAWING, PICTURE, ENVELOPE, EI
CONTRACTING AGENCY	DRAWING, PICTURE, ENVELOPE, EI
CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS	
CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS  QUALIFIED	DRAWING, PICTURE, ENVELOPE, PI
CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN	
CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN	
CONTRACTING AGENCY  PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN	
CONTRACTING AGENCY	

## ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.4.2 TRANSDUCER, TEMPERATURE

[YPE			
ESIGN USE			·
EMPERATURE MEASUREMENT RANGE	o <sub>C</sub>	(_	o <sub>F</sub> )
ENSITIVITY ±	•c	( <u>±</u>	o <sub>F</sub> )
RROR BAND	o <sub>C</sub>	(	<b>°</b> F)
HERMAL TIME CONSTANT	sec		
UPPLY VOLTAGE RANGE	Ydc		
OMINAL RESISTANCE	Ω @	_°c (	o <sub>F</sub> )
AXIMUM CONTINUOUS CURRENT	AMPERES		
	mA MAXIMUM CURRENT VOLTS rms, Hz	LEAKAGE	
SULATION RESISTANCE	ΜΩ @	Vdc	
DUNTING PROVISIONS			
ATERIAL			
NNECTION-ELECTRICAL			
\S\$	kg	1 bm	
THER SIGNIFICANT CHARACTERISTICS			

#### 2. GENERAL DISCUSSION

#### 2.1 Component Use

Although this catalog is entitled ATTITUDE CONTROL PROPULSION COMPONENTS, the items described herein have been or could be used in systems performing functions other than attitude control, including velocity control and orbit adjustment. The cataloged components can be used in a seemingly endless number of arrangements depending upon what the propulsion subsystem designer wishes to accomplish. Typical inert gas and hydrazine propulsion systems, as well as a combination thereof, are shown schematically in Figure 1, which also depicts one or more uses for each of the catalog components.

As mentioned in Section 1.2, only those items commonly found in inert gas or hydrazine propulsion systems are included as catalog items. For an in-depth discussion of these and other unmanned spacecraft propulsion systems the interested party should refer to "SATELLITE AUXILIARY - PROPULSION SELECTION TECHNIQUES," by L. B. Holcomb, TR32-1505, November 1970, Jet Propulsion Laboratory, Pasadena, California.

#### 2.2 Inert or Cold Gas Systems.

An inert gas system is inherently simple because of its utilization of one non-reacting gaseous propellant. A schematic diagram of this type of system is shown in Figure la.

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The fill and vent (manual) valve is used for charging the system. An isolation valve seals the system until activation. The gas pressure regulator maintains the correct pressure to the inert gas thrusters, which are usually solenoid valves with integral expansion nozzles. A filter retains particulate contamination to prevent valve seat damage and subsequent leakage and a relief valve precludes overpressurization of the downstream portion in the event of regulator failure. Pressure transducers monitor system performance and are used to indicate propellant consumption.

An advantage of this system is its high reliability; disadvantages include low specific impulse and high pressure.

#### 2.3 Hydrazine Systems

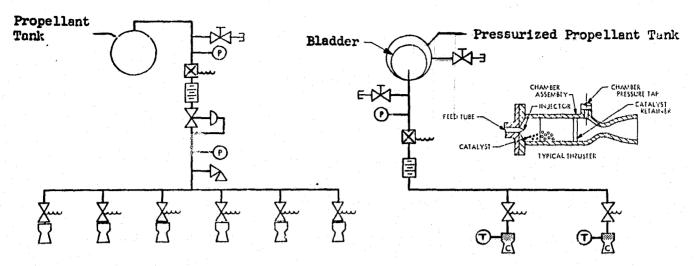
A typical blow-down hydrazine system is shown schematically in Figure 1b. In this case, the inlet pressure to each hydrazine thruster decreases as the propellant is expended. Some schemes utilize a separate pressurant tank and pressure regulator, as depicted in Figure 1c, to maintain a constant propellant pressure.

As with the cold gas system, an isolation valve is used to seal the system or, in some cases, a branch of the system, until ready for use. Pressure and temperature transducers monitor system performance and propellant usage.

While offering the advantages of lower pressures and higher specific impulse, the blow-down hydrazine system has an additional requirement for a device to positively locate the propellant. This device may be in the form of a

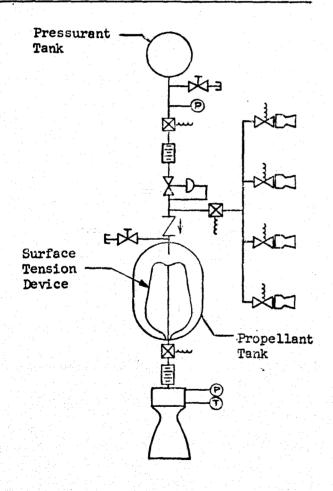
bladder or diaphragm separating propellant and pressurant; surface tension devices may also be used. In the case of spin-stabilized spacecraft, the centrifugal force located the liquid propellant and these devices are not necessary.

As implied by the schematic diagrams in Figure 1, most of the components in this catalog may be procured as discreet items. Exceptions are the hydrazine thrusters of Section 4.3.1 which are, in general, only obtainable from the manufacturer as a thruster/valve assembly. The valve for which the thruster was designed and for which the given engineering data are applicable is referenced on the thruster data sheet.



a) Typical Inert Gas Attitude Control System

b) Typical Hydrazine Attitude Control System



c) Miscellaneous Combinations

Propellant Control Subassemblies Filter, Gas/Liquid ~Isolation Valve Relief Valve Check Valve Gas Pressure Regulator - Fill And Vent Valve Thruster/Valve Assemblies w Hydrazine Thruster Valve Hydrazine Thruster Inert or Cold Gas Jet Valve Transducers

- Pressure Transducer
- Temperature Transducer

#### 3. VARIABLES AND UNITS

The National Aeronautics and Space Administration announced in NASA Policy Directive NPD 2220.4 dated September 14, 1970, "Measurement values employed in NASA Technical Reports, Technical Notes, Technical Memoranda, Contractor Reports, and Special Publications shall be expressed in the International System of Units (SI)." A recent paper by D. E. Carmody of McDonnel Douglas states that: "Aerospace will, in all probability, be among the very first industries to be affected when the United States government, after 180 years of debate, finally decides to 'go metric.'" Hopefully the use of these units in Attitude Control Propulsion Components will be beneficial to this effort.

Contributors supplied almost all engineering data in English Units. Exceptions were leakage rates, which are generally quoted in metric units throughout the industry. Since English units are still the most familiar to personnel in the aerospace community, these units are retained in parentheses throughout the catalog.

The International System of Units (Systeme International d'Unites which is designated SI in all languages) is the system of units recognized by the majority of industrial nations. The 11th through 14th General Conference on Weights and Measures meeting from 1960 to 1971 have refined the International System of Units to a state of completeness and coherence that make it attractive for all applications.

The system is based on seven fundamental units from which all necessary units can be derived:

Length	meter (m)
mass	kilogram (kg
time	second (s)
electric current	ampere (A)
thermodynamic temperature !	kelvin (K)
amount of substance	mole (mol)
luminous intensity	candela (cd)

A computer program was utilized to convert English/Metric units of length, area, weight, volume, pressure, and others. On reason for generating this program was the desire to have the result in SI units, not just non-standard metric units. The 36 conversion factors in an expandable array convert from English to SI and SI to English. Another feature of the program is a precision algorithm which checks that the new unit represents the same degree of accuracy as the original. The number of significant (non-zero) digits of the original units becomes the number of significant digits, assigned from left to right, of the converted unit. All extraneous digits are truncated.

Those contributors supplying additional catalog data (see Section 1.4, Updating) should attempt to follow a conversion methodology similar to that explained here. Reference should be made to NASA publication SP-7012, "THE INTERNATIONAL SYSTEM OF UNITS: Physical Constants and Conversion Factors".

A summary of the conversion factors used throughout the catalog follows:

TO CONVERT FROM	<u>TO</u>	MULTIPLY BY
°C	<b>°F</b>	$t_F = (t_c \times 9/5) + 32$
• <b>F</b>	<b>°C</b>	$t_c = (5/9)(t_F - 32)$
hr	sec	3600
in .	cm	2.540
in	<b>m</b> = 1   1   1   1   1   1   1   1   1   1	.0254
kg	<b>1</b> b	2.205
<b>1</b> bf	N	4.448
1bm	kg	.4536
1b/ft <sup>3</sup> of GHe	SCFM	89.76
$1b/ft^3$ of $GN_2$	SCFM	12.80
$1b/ft^3$ of $GO_2$	SCFM	11.20
1bm/min	1bm/sec	.0166
min	sec	60
<b>oz</b>	kg	.02835
OZ	1bm	.06250
psia	N/cm <sup>2</sup>	.68948
psid	N/cm <sup>2</sup>	.68948
psig	psia	psia = psig + 15
SCCH	SCCS	.000277
SCCM	SCCH	59.9
sccs	SCFM	.0021
SCFM	SCCS	472
sec	h <b>r</b>	.0002778
sec	min	.01667

#### 4.1 VOLUME-ORDERED DATA SUMMARY

#### 1. LIQUID TANKS

VOLUME CU M	VOLUME CU IN	PRESSURE N/SO M	PRESSURE PSI	CONTENTS	PROGRAM/VEHICLE	DATA SHEET NUMBER
.007780	457	413	600	N2H4 AND N2	INTELSAT III	IV-32
.007980	487	275	400	N2H4	HS 310	IV-34
•008140	497	275	400		IDCS	IV-35
.008140	497-	275	400	HYDRAZINE	SKYNET	IV-36
• <b>00</b> 8 <b>19</b> 0	500	206	300	HYDRAZINE	EXPLORER-B	IV-37
•011400	697	212	308	N2H4	MARINER/MARS	IV-42
.018020	1.100	413	<b>60</b> 0	N2H4	DSCS-II	IV-59
•022790	1,391	299	435	N2H4	GEOS	IV-64
.037690	2,300	444	645	NZH4	ERTS	IV-87
•037690	2,300	368	<b>53</b> 5	N2H4	PIONEER	IV~88
•037690	2.300	275	400	N2H4	ATS F&G	IV-89
.037690	2,300	262	380	N2H4	MVM	IV-90
•037690	2.300	368	535	N2H4	OATS	IV-91
•055230	3,370	344	500	N2H4 N2	MODEL 35	IV-111
.061880	3•776	413	600	N2H4 AND N2	MODEL 35	IV-116
•0 <b>6203</b> 0	3.785			N2H4	LES	IV-117

#### 4.1 VOLUME-ORDERED DATA SUMMARY

#### 1. LIQUID TANKS

VOLUME CU M	VOLUME CU IN	PRESSURE N/SQ M	PRESSURE PSI	CONTENTS	PROGRAM/VEHICLE	DATA SHEET NUMBER
.091210	5,565	250	364	HYDRAZINE AND GN2	VIKING LANDER . CAPSULE	IV-133
.091210	5•565	241	<b>35</b> 0	N2H4	FLEET SAT-COM	IV-134
•091450	5,580	241	350	N2H4	P <b>-</b> 95	IV-136
•091450	5,580	241	350	N2H4	P=95	IV-137
•091780	5.600	241	<b>35</b> 0	HYDRAZINE	P <b>-</b> 95	IV-138
.112000	6,835	377	547	요 : 10	VIKING ORBITOR * 75	IV-142
.128700	7.853	165	240	N204	MMBPS	IV-147
.129400	7,900	166	242		MMBPS	IV-148
.129400	7•900	166	242		MMBPS	IV-149
.220310	13.442	206	300	MMH AND NTO	MM	IV-157
.718060	43•811	227	330		VIKING	IV-166

#### 4.1 VOLUME-ORDERED DATA SUMMARY

#### 2. GAS TANKS

VOLUME CU M	VOLUME CU IN	PRESSURE N/SQ M	PRESSURE PSI	CONTENTS	PROGRAM/VEHICLE	DATA SHEET NUMBER
.000204	12	2,757	4.000	METHANE	050	V-9
•000313	19	4,357	6•320	HE & C02	VIKING	V-17
.000490	30	2,413	3.500		BIOSATELLITE	V-29
.001000	<b>65</b>	2,068	3.000		IDCS	V-54
.001100	68	2,068	3.000	N2	SCOUT PROJECT	v-58
.001390	85	4,136	6,000		MARINER/MARS	V <b>-</b> 65
.001430	87.	4,136	6,000	NS	MARINER/MARS	V=66
.001700	104	2.240	3+250	GAS. N2	DISCOVERER. PIONEER	V-81
.001700	104	155	225		LES	V-82
.001850	113	2,757	4,000		VELA HOTEL	V-86
.001850	113	2,275	3,300	N2	MARINER/MARS	V-87
.001850	113	2,768	4.015	N2	VELA 3	V-88
.003760	230	2,757	4,000	HE METHANE	050	V-146
.006240	381	1,758	2•550	N2	MARINER/MARS	V-200
.006550	400	2,495	3,620		HEOS-A	V-210
.006780	414	3,033	4+400		VELA V AND VI	V-213
	and the second of the second o					

VOLUME CU M	VOLUME CU IN	PRESSURE N/SQ M	PRESSURE PSI	CONTENTS	PROGRAM/VEHICLE	DATA SHEET NUMBER
.007810	477	2,378	3•450		ATS	V-229
.007830	478	2,378	3+450	N2	ATS	V-231
.007860	480	1,389	2.015	FREON 14	NIMBUS	V-232
.011430	697	2,768	4,015	N2	VELA 4	V-266
•014600	894	1,723	2,500	FREON 14	NIMBUS	V-292
•016380	1.000	3,033	4,400		VIKING ORBITER • 75	V-314
•020800	1,275	2,068	3,000	N2	ORBITAL SOLAR OBSERVATORY H	V <b>~329</b>
.021190	1,293	2,078	3.015	AR	EGO AND POGO	V-331
.025870	1,579	2,633	3,820	N2	LUNAR ORBITER	v-349
.026630	1.625	2,785	4•040		MARINER MARS 171	v-356
.046770	2,854	723	1.050	02	BIOS	V-420
•056470	3,446	2,757	4.000	N2	MMBPS	V-427
•056900	3,475	2,757	4.000		MMBPS	V-430
.074570	4,550	586	850	H2	BIOS	V <b>-43</b> 7
•130600	7,914				VIKING ORBITER	V-470

4.1-4

MANUFACTURER	Aircraft Poro	us Media	
		(16)	
	466075050		
PART NUMBER	AC6875853		
			일시하는 원습의 상황이 되는 회약
		ligger om det en kalenderen. Angelek menganisan	
PROGRAM		Apollo	되는 이번 중심하다 소리를 받았다.
FROGRAMI			
OCNTRACTING A	GENCY	NASA	
CUNIKACTING A	JENUT		
DO LIVE CONTRACT	- <u> </u>		
PRIME CONTRACT	IOK		
			어른 경우 사람들의 얼마를 하는 그렇게
STATUS		Yes	
QUALIFIED.			
FLOWN		Yes	
LAUNCH VEH	ICLE	Saturn	
			네마트 하면 기를 보는 사람이 되었다.
AVAILABILITY.			
			기 : 기계 : 기계 기계 : 10명을 위치 : 기계 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 :
COST/PROCUREME	ENT INFORMATION	5 to 9 units	<b>-</b> \$600
25 - 10 11 11 11 11 12 12 13 그리다는 하는데 그는 32 32 3			보고 있다는 것 같은 보고 있었다. 그런 사이에 하면 당근에 들어 있다. 이 글 사람들은 보고 있는 것 같은 사람들이 있는 것 같은 것 같다.

TYPE  DESIGN FLOW MEDIA			
RATING	· .	MICRONS ABSOLUTE	
RATED FLOW @ PRESSURE DIFFERENTIAL		0 K/cm <sup>2</sup> ,	
CAPACITY . MAX. PRESSURE DIFFERENTIAL	gms •	N/cm <sup>2</sup> ( PSID	<b>)</b>
PRESSURES - " OPERATING	3678 N/cm <sup>2</sup> 5526 N/cm <sup>2</sup>	(	
OPERATING TEMPERATURE RANGE	°c	(°F)	
EXTERNAL LEAKAGE	scc/s of	M/cm <sup>2</sup> (e	PSIA)
MATERIAL - CONSTRUCTION			· · · · · · · · · · · · · · · · · · ·
CONNECTION - INLET OUTLET			
MASS	17 kg	(1bm)	

MANUFACTURER Vacco Industr	ies(46)
The first of the second of the	
PART NUMBERF1D10180-01	
	원하는 그리고 그러는 그리는 그는 그 모르겠다. 얼룩하고
	그는데 인생님 하면 하면 그렇게 되었다.
	이 사이를 가고 있다. 그런 얼굴 보고 있다는 것이다.
PROGRAM	OSO-1
	하는 살길 보는 사람들은 하는 사람들은 사람들이 되었다.
CONTRACTING AGENCY	<u>N</u> ASA
	_Hughes_Aircraft
PRIME CONTRACTOR	
STATUS	그림에는 요한 사람이라 다른 얼마요한 물만 등 말을 만한 그 때
QUALIFIED	Yes Yes
FLOWN	Yes
LAUNCH VEHICLE	Delta DM-19
AVAILABILITY	8 to 10 weeks
COST/PROCUREMENT INFORMATION	
	요요 하는데 보는 바다 없는 하는 하는데 보다는 것은 모든 그리고 있다는데, 이번 이 보고 있는데 말은

TYPE	.0063 m (.	25 in) Inli	ne Filter	Assen	bly_
DESIGN FLOW MEDIA	GN <sub>2</sub>		:		
RATING	10	M	ICRONS ABSOLUT	ΓE	
RATED FLOW @ PRESSURE DIFFERENTIAL	$\frac{3.3 \times 10^3}{(\underline{7.0})^{3}}$ scc/s	of GN <sub>2</sub>	.6 H/cm <sup>2</sup> ,	23	°C
	(SCFM	of • _	PSID,_		<b>F</b> )
CAPACITY . MAX. PRESSURE DIFFERENTIAL	gms e	N/cm	2 (	PSID)	
PRESSURES -  OPERATING	4136 N/cm <sup>2</sup> 965.2 N/cm <sup>2</sup> 2757 N/cm <sup>2</sup>	( <u>6000</u> ( <u>1400</u> ( <u>4000</u>	PSIA) PSIA) PSIA)		
OPERATING TEMPERATURE RANGE	+4.4 to °c	( <u>+40 t</u>	<u>O</u> F)		
EXTERNAL LEAKAGE	scc/s	of @	M/cm <sup>2</sup>	(e	PSIA
MATERIAL - CONSTRUCTION	Titanium 304 L Stair	less Steel			
CONNECTION - 1NLET OUTLET		in) tube x	.018 wal	1	
MASS	kg		.30 lbm)		
ATUED CIONICICANT CHARACTERISTICS					

MANUFACTURER	Vacco Industrie	es (46)	
	e de la companya de La companya de la co		
PART NUMBER _	SL-81019		
PROGRAM		Lunar Orbiter	
CONTRACTING AG	BENCY		
PRIME CONTRACT	TOR	Boeing Co.	
STATUS			
QUALIFIED		Yes	
FLOWN		Yes	
LAUNCH VEHI	CLE	Atlas Agena SLV-3	
AVAILABILITY		_8 to 10 weeks	
OOOT / PROCUEENE	NT INCODIATION		
COST/PROCUREME	NT INFORMATION		
다른 교기 기능이 있는데? 일반 전 15명 등이 보기된			

TYPE	Inline Filter Assembly
DESIGN FLOW MEDIA	Gaseous Nitrogen
RATING	MICRONS ABSOLUTE
RATED FLOW @ PRESSURE DIFFERENTIAL	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
CAPACITY . MAX. PRESSURE DIFFERENTIAL	gms e N/cm <sup>2</sup> ( PSID)
PRESSURES -  OPERATING	N/cm <sup>2</sup> (PSIA)N/cm <sup>2</sup> (PSIA)N/cm <sup>2</sup> (PSIA)
OPERATING TEMPERATURE RANGE	$-53 \text{ to } 71_{\sigma_{c}^{1}}$ $(-65 \text{ to } ^{160}_{F})$
EXTERNAL LEAKAGE	scc/s of @ N/cm <sup>2</sup> (@ PSIA
MATERIAL - CONSTRUCTION	304 L Stainless Steel same
CONNECTION - INLET	1/4 o.d. tube x .035 wall same
MASS	014 kg (033 1bm)

MANUFACTURER Vacco Industries (46)

PART NUMBER F1D10178-01	
PART NUMBER	
PROGRAM	
CONTRACTING AGENCY	JPL
CONTINUE AGENCY	
PRIME CONTRACTOR	Martin Marietta Corp.
PRIME CONTRACTOR	
<u></u>	
STATUS	
QUALIFIED	Yes
FLOWN	Yes
LAUNCH VEHICLE	
agentina de la companya de la compa La companya de la companya de	[1] [[18] 12] [1] [1] [1] [[1] [[1] [[1] [[1] [[
AVAILABILITY	8 to 10 weeks
ATATEMPTE	
COST/PROCUREMENT INFORMATION	
CUST/PROBLIKEMENT TREUKMATTON	
AAA11. HAAAHEMENT INI ANNA 1100	ta <del>Marada and Marada and a sanda and a sanda</del> Tanga and a sanda and a sa

4.2.1-7

TYPE	.00952 m (.375 in) Inline Filter Assembly
DESIGN FLOW MEDIA	Helium
RATING	12 MICRONS ABSOLUTE
RATED FLOW @ PRESSURE DIFFERENTIAL	$7.5 \times 10^{3}$ scc/s of He = 3 N/cm <sup>2</sup> , 23 °c ( 16 SCFM of He = 5 PSID, 75 °F)
CAPACITY • MAX. PRESSURE DIFFERENTIAL	gms e N/cm <sup>2</sup> ( PSID)
PRESSURES - OPERATING	
OPERATING TEMPERATURE RANGE	-1.1 to +32 (+30 to 90°F)
EXTERNAL LEAKAGE	scc/s of @ N/cm <sup>2</sup> (e PSIA
MATERIAL -  CONSTRUCTION	
INLET	
OUTLET  MASS  OTHER SIGNIFICANT CHARACTERISTICS	

MANUFACTURER	Vacco Industrie	s <u>(46)</u>
	CT 91500	
PART NUMBER _	SL-81500	
PROGRAM		Apollo
CONTRACTING AG	ENCY	
PRIME CONTRACT	OR	N.A.A.
STATUS		
		Voc
QUALIFIED		Yes
FLOWN		Yes
LAUNCH VEHI	CLE	Saturn
AVAILABILITY		8 to 10 weeks
COST / DRACHDENE	NT INFORMATION	
CUSI/FRUCUREME	n: INTURMATIUN	
		경영화 기계를 되었다. 교육한 중요한 전환 기계를 보고 있다. 전환 기계를 보고 있는 것이 되었다. 기계를 되었다.

TYPE	Inline Filter Assembly
DESIGN FLOW MEDIA	Gaseous Helium
	MICRONS ABSOLUTE
RATED FLOW @ PRESSURE DIFFERENTIAL	$1.8 \times 10^4$ scc/s of He = 6.8 N/cm <sup>2</sup> , 23 °C ( 40 SCFM of He = 10 PSID, 75 °F)
CAPACITY . MAX. PRESSURE DIFFERENTIAL	gms eN/cm <sup>2</sup> (PSID)
PRESSURES -  OPERATING  PROOF  BURST  MIN. ELEMENT COLLAPSE DIFFERENTIAL	2413 N/cm <sup>2</sup> ( <u>3500</u> PSIA)
OPERATING TEMPERATURE RANGE	$-170 \text{ to } ^{71.1} $ ( $-275 \text{ to } ^{4160}$
MATERIAL -	scc/s of@N/cm <sup>2</sup> (@PSIA
CONSTRUCTION	304 L Stainless Steel
ELEMENT	same
CONNECTION -	
	1/4 o.d. tube x .035 wall same
OUTLET	
MASS	kg (3lbm)

OTHER SIGNIFICANT CHARACTERISTICS .....

MANUFACTURER Vacco Industries	<u>(46)</u>
PART NUMBER S2-8846	
PROGRAM	I.EM
CONTRACTING AGENCY	
PRIME CONTRACTOR	Grumman
STATUS	
QUALIFIED	Yes Yes
FLOWN	
AVAILABILITY	8 to 10 weeks
COST/PROCUREMENT INFORMATION	
	1 <u> - 15 - 16 - 16 - 16 - 16 - 16 - 16 - 16</u>
보는 사람들은 고양을 다음 하지만 되었다. 1000년 대한 교회 (2015년 대한 1982년 1	
본 아내는 사람이 보는 얼마를 보니다.	

TYPE	Inline Filter Assembly	· · · · · · · · · · · · · · · · · · ·
DESIGN FLOW MEDIA	Gaseous Helium	
RATING		,
RATED FLOW @ PRESSURE DIFFERENTIAL	$\frac{6.3 \times 10^{4}}{(1.3\times10^{2})^{2}} \text{ of } \frac{\text{He}}{\text{of } \text{He}} = \frac{1.9}{2.8} \text{ PSID, } \frac{18}{65}$	°C °F)
CAPACITY @ MAX. PRESSURE DIFFERENTIAL	gms e N/cm <sup>2</sup> ( PSID)	
PRESSURES -  OPERATING  PROOF  BURST  MIN. ELEMENT COLLAPSE DIFFERENTIAL  OPERATING TEMPERATURE RANGE	3668 N/cm <sup>2</sup> (5320 PSIA)	
EXTERNAL LEAKAGE	scc/s of @ N/cm <sup>2</sup> (@	_ PSIA
MATERIAL - CONSTRUCTION	3/8 o.d. tube x .040 wall same	

MANUFACTURER	Aircraft Poro	us Media
		(16)
PART NUMBER	AC6875855	
		보고 하는 연결 하는 연호 제공 사는 글 아름지 않는 것은
PROGRAM		Apollo
	e de la companya de l	
CONTRACTING A	GENCY	NASA
		요마 보는 사람이 하루에 하노는 하는 사람이 모음을 모르는데 다른데 다른데 다른데 다른데 다른데 다른데 다른데 다른데 다른데 다른
PRIME CONTRAC	TOR	
andreas Applications		
STATUS		그리다 그 그 그리고의 얼마는 얼마나 없었다고 말을 입었다.
QUALIFIED.		Yes
FLOWN		
LAUNCH VEH	ICLE	Saturn
		보기 보이 되었다. 그는 사람들은 경험에 보는 사람들이 되었다. 그 사람들이 되었다. 
AVAILABILITY.		
CAST / DDACHDEM	ENT INFORMATION	5 to 9 units - \$1450
CUSI/FRUCUREM	ENI INFURMATIUN	

TYPE	Ol m (.5 in) Inline Braze		
DESIGN FLOW MEDIA	GHe		
RATING	15	MICRONS APSOLUTE	
RATED FLOW @ PRESSURE DIFFERENTIAL	$\frac{1.7 \times 10^{5}}{(3.8 \times 10^{2})}$ cfm of _	e N/cm <sup>2</sup> ,	_°c , °F)
CAPACITY . MAX. PRESSURE DIFFERENTIAL	gms +	N/cm <sup>2</sup> ( PSID)	
PRESSURES - OPERATING PROOF	1616 N/cm <sup>2</sup>	( 1765 PSIA) ( 2345 PSIA) ( 3515 PSIA)	
MIN. ELEMENT COLLAPSE DIFFERENTIAL		( PSIA)	
OPERATING TEMPERATURE RANGE	oc	o <sub>F</sub> )	
EXTERNAL LEAKAGE	scc/s of	# N/cm <sup>2</sup> (#	PS (A)
MATERIAL - CONSTRUCTION			
CONNECTION -			
OUTLET			
MASS	kg	( <u>0.43</u> 1bm)	
OTHER SIGNIFICANT CHARACTERISTICS			

Brunswick Colp.	(24)
MANUFACTURER Winter Div.	
and the second of the second o	
PART NUMBER 3228-506	
	그리 점점 되는 회장 시간에 이용하는 그리고 화장이 있다.
erikan di kacamatan mengan di kacamatan di Kabupatèn Kabupatèn Kabupatèn Kabupatèn Kabupatèn Kabupatèn Kabupat Kabupatèn Kabupatèn	Classified
PROGRAM	
CONTRACTING AGENCY	USAF
PRIME CONTRACTOR	
FRIME CONTRACTOR	
	보고 하기 모임들의 나는 이번 그는 그는 모임으로만 된
STATUS	
QUALIFIED	Yes
FLOWN	
LAUNCH VEHICLE	
	후 문장의 이 생생님, 생원 경우를 가능하는 하는 화장을 받
AVAILABILITY	된 경기를 하지 않는 아이들은 이 그들은 얼마를 가장 되고 있었다.
	구석에 하고 보고 하를 내고 받는데 하면 가고 되지 않다.
COST/PROCUREMENT INFORMATION	
근 얼마는 민준들이 모든 민준이를 모으고	고보이면 한다는 이번 독면 어릴 때문 전쟁을 보면 얼 먹으라는 어느 만했다.

TYPE	Woven	wire	•				·
DESIGN FLOW MEDIA	GN <sub>2</sub>						
RATING	25			MICRONS	ABSOLU <sup>1</sup>	TE	
RATED FLOW @ PRESSURE DIFFERENTIAL		_scc/s of _ _SCFM of _		r ·			
CAPACITY . MAX. PRESSURE DIFFERENTIAL		gms e		N/cm <sup>2</sup> (		_ PSID)	
PRESSURES - OPERATING	N/A N/A N/A 689.4	N/cm <sup>2</sup>	(	PS PS PS	IA)		
OPERATING TEMPERATURE RANGE	N/A		( @	°F)	_ N/cm <sup>2</sup>	(e	PSIA
MATERIAL - CONSTRUCTION	N/A						
ELEMENT	A1S1-3	304					
CONNECTION - INLET OUTLET	N/A N/A						
MASS	0.006	kg		0.01	1 bm)		

OTHER SIGNIFICANT CHARACTERISTICS ....

Brunswick Corp.

MANUFACTURER	Wintec Div.	(24)
PART NUMBER	14228-502	
PROGRAM		Classified
CONTRACTING A	GENCY	USAF
PRIME CONTRACT	TOR	
STATUS		Yes
		Yes
LAUNCH VEH	ICLE	
AVAILABILITY.		
COST/PROCUREMI	ENT INFORMATION	
그 없는 것 같은		

TYPE	Woven wire				
DESIGN FLOW MEDIA	GN <sub>2</sub>				
RATING	MICRONS ABSOLUTE				
RATED FLOW . PRESSURE DIFFERENTIAL		C F)			
CAPACITY . MAX. PRESSURE DIFFERENTIAL	gms eN/cm <sup>2</sup> (PSID)				
PRESSURES - OPERATING					
OPERATING TEMPERATURE RANGE	°C (°F)				
MATERIAL -	N/Ascc/s ofeN/cm² (e 300 Series Cres 300 Series Cres	_ PS 1/			
CONNECTION -	MS-33656-4 Style "E"				
OUTLET	MS-33656-4 Style "E"  0.1 kg ( 0.4 lbm)				

MANUFACTURER Vacco Industries

(46)

	tal t	
PART NUMBER	F1D10132-01	
en de la companya de La companya de la co		Apollo
PROGRAM		
CONTRACTING	GENCY	NASA
CONTRACTING A	IUENCI	
PRIME CONTRAC	TOR	Rockwell
STATUS		를 받고 그는 바람이 있으라는 이 이 그들이 모양을 하고 있다.
QUALIFIED.		Yes
7.1		Yes
LAUNCH VEH	ICLE	Saturn
		생기 보고 이 회사는 사람들은 생물을 받는 것이 하는 것이 없는 것이다.
AVAILABILITY.	ing distriction of the second	8 to 10 weeks
		그렇게 하시 하다는 이번 하시 하보다 얼마 나를 하고 됐다.
COST/PROCUREM	ENT INFORMATION	
		and the state of the second of the second The second of the second of
		이번 회의 회사 전문 사람이 가는 그들이 가는 것은 것은 것이다. 기업

DESIGN FLOW MEDIA   40	TYPE	.0063 m (.25 in) Inline Filter Assembly
RATED FLOW ** PRESSURE DIFFERENTIAL   1.99 x 10.5   CN2	•	
CAPACITY • MAX. PRESSURE DIFFERENTIAL.   gms •   N/cm² (	RATING	40 MICRONS ABSOLUTE
PRESSURES -         689.4 N/cm² ( 1000 PSIA)           PROOF	RATED FLOW @ PRESSURE DIFFERENTIAL	$\frac{1.99 \times 10^{5} \text{ scc/s of } \frac{\text{GN}2}{\text{SCFM of } \frac{\text{GN}2}{\text{GN}2}} \bullet \frac{10}{15} \text{ PSID, } \frac{23}{75} \circ_{\text{F}})$
OPERATING         689.4 N/cm²         ( 1000 PSIA)           PROOF         1406 N/cm²         ( 2040 PSIA)           BURST         2813 N/cm²         ( 4080 PSIA)           MIN. ELEMENT COLLAPSE DIFFERENTIAL         N/cm²         — PSIA)           OPERATING TEMPERATURE RANGE         76.6 - 170 to °C         ( -275 to °F)           EXTERNAL LEAKAGE         scc/s of e N/cm² (e PSIA)           MATERIAL - CONSTRUCTION         304 L Stainless Steel           ELEMENT         Same           CONNECTION - INLET         1/4 o.d. tube x .035 wall           OUTLET         Same           MASS         .1 kg ( .3 lbm)	CAPACITY . MAX. PRESSURE DIFFERENTIAL	gms e N/cm <sup>2</sup> ( PSID)
EXTERNAL LEAKAGE	OPERATING  PROOF  BURST  MIN. ELEMENT COLLAPSE DIFFERENTIAL	1406 N/cm <sup>2</sup> ( 2040 PSIA)  2813 N/cm <sup>2</sup> ( 4080 PSIA)  N/cm <sup>2</sup> ( PSIA)
CONSTRUCTION         304 L Stainless Steel           ELEMENT         Same           CONNECTION - INLET         1/4 o.d. tube x .035 wall           OUTLET         Same           MASS		
1/4 o.d. tube x .035 wall	CONSTRUCTION	
MASS (31bm)	INLET	

MANUFACTURER	Brunswick Corp. Wintec Div.	(24)	
PART NUMBER	12204-508		
IANI NOMPEN	•		
PROGRAM		Apollo	
00UT040T1N0 4	AFMAY	NASA	
CUNIKACIING A	GENCY		
PRIME CONTRAC	TOR		
STATUS			
1		Yes	
FLOWN		Yes	
LAUNCH VEH	ICLE	Saturn	
AVAILABILITY.			
COST/PROCUREM	ENT INFORMATION		

TYPE	Woven wire		A. 111 A. 11	
DESIGN FLOW MEDIA	He			
RATING	60	MICROI	IS ABSOLUTE	
RATED FLOW . PRESSURE DIFFERENTIAL	$\frac{3 \times 10^3}{(\underline{8})} \text{ scc/s of}$	He • 106	N/cm <sup>2</sup> ,	_°C _°F)
CAPACITY • MAX. PRESSURE DIFFERENTIAL  PRESSURES - OPERATING	217 N/cm <sup>2</sup> 320 N/cm <sup>2</sup> 837 N/cm <sup>2</sup> 106 N/cm <sup>2</sup>	M/cm <sup>2</sup> (	PSIA) PSIA)	
OPERATING TEMPERATURE RANGE	•c	(o <sub>I</sub>	•)	
EXTERNAL LEAKAGE	0.001 scc/s of	He e	N/cm <sup>2</sup> (e	PSIA)
MATERIAL -  CONSTRUCTION  ELEMENT  CONNECTION -  INLET	'			
OUTLET	AND-10050-4	0.0		
MASS	kg	(	1 bm)	

MANUFACTURER	Brunswick Corp Wintec Div.	). (	(24)		
PIANOT AO TONON					
	11204-501				
PART NUMBER _	11204-301		<del></del>		
	•				
and the second s					
PROGRAM		Apol1	Lo		
CONTRACTING AC	ENCY	NASA			
PRIME CONTRACT	OR				
STATUS					
		Yes			
FLOWN		Yes			
LAUNCH VEHI	CLE	Satur	9		
AVAILABILITY					
COST/PROCUREME	NT INFORMATION				
					and the second second

TYPE	Woven wire				
DESIGN FLOW MEDIA	Не				
RATING	60	MICRONS ABSOLUTE	MICRONS ABSOLUTE		
RATED FLOW @ PRESSURE DIFFERENTIAL		$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	°c °F)		
CAPACITY . MAX. PRESSURE DIFFERENTIAL	gms e	N/cm <sup>2</sup> ( PSID	)		
PRESSURES - OPERATING PROOF BURST MIN. ELEMENT COLLAPSE DIFFERENTIAL		(PSIA) (PSIA) (PSIA) (PSIA)			
OPERATING TEMPERATURE RANGE	°c		PSIA		
MATERIAL - CONSTRUCTION	SS-304 L 304 L				
CONNECTION - INLET OUTLET					
MASS	0.06 kg	( 0.1 1bm)			
OTHER SIGNIFICANT CHARACTERISTICS					

MANUFACTURER	Brunswick Corp. Wintec Div.	(24)	
THE TOTAL CONTROL			
PART NUMBER	12204-505		
anders of the second of the se			
PROGRAM		Apollo	
FROGRAMILITIES			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
CONTRACTING A	CENCY	NASA	ų.
CONTRACTING A	3ENV1	MAJA	
DOLLIE CONTRACT	<b>700</b>		
PRIME CONTRACT	IUK.		
STATUS			
QUALIFIED.		Yes	
FLOWN		Yes	
LAUNCH VEH	CLE	Saturn	
AVAILABILITY			
COST/PROCUREME	ENT INFORMATION		

TYPE	Woven wire				
DESIGN FLOW MEDIA	_He				· · · · · · · · · · · · · · · · · · ·
RATING	74	MI	ICRONS ABSOLUT	E	
RATED FLOW @ PRESSURE DIFFERENTIAL	$\frac{3 \times 10^3}{(\underline{8})} \text{ scc/s of }$				
CAPACITY . MAX. PRESSURE DIFFERENTIAL	gms 9	.34_ N/cm <sup>2</sup>	.50	PSID)	
PRESSURES - OPERATING		(	PSIA)		
OPERATING TEMPERATURE RANGE	°c	(	_°F)		
EXTERNAL LEAKAGE	N/A scc/s of_	•	N/cm <sup>2</sup>	( •	PSIA)
ELEMENT	300 Series Cre	S			
CONNECTION - INLET OUTLET					
MASS	나는 일이 걸는 일이 없이	(0	).15_1bm)		
OTHER SIGNIFICANT CHARACTERISTICS					

MANUFACTURER	Brunswick Corp. Wintec Div.	(24)
PART NUMBER	15204-516	
		요즘 보다는 것이 되었다. 그들의 사람들이 가장하는 것도 되었다. 것이 할 것이 한국 발생들이 되는 것 같아 사람들이 되었다. 하는 것이 되었다.
PROGRAM		Apollo
CONTRACTING A	GENCY	NASA
PRIME CONTRAC	TOR	
STATUS		
Control of Table		· yes :-
	1CLE	Saturn
		가는 마이트에 되어 되는데 그를 통하는데는 보는데, 말을 통하고 있다고, 바이를 네가는 어린 하는데, 다른, 중요한 나는데, 말을 하고 있다면 하는데, 그리는데,
AVAILABILITY.		
COST/PROCUREM	ENT INFORMATION	
	성당하다 하다. 하를 하다 살았다.	

TYPE	Woven wire
DESIGN FLOW MEDIA	Не
RATING	74 MICRONS ABSOLUTE
RATED FLOW @ PRESSURE DIFFERENTIAL	$\frac{1.9 \times 10^{5}}{(\underline{403}}_{\text{SCFM of}}^{\text{Scc/s of}} \underbrace{\begin{array}{ccccccccccccccccccccccccccccccccccc$
CAPACITY @ MAX. PRESSURE DIFFERENTIAL	gms e N/cm <sup>2</sup> ( PSID)
PRESSURES -  OPERATING  PROOF  BURST  MIN. ELEMENT COLLAPSE DIFFERENTIAL	
OPERATING TEMPERATURE RANGE	oc (of)
EXTERNAL LEAKAGE	N/A _ scc/s of @N/cm <sup>2</sup> (@PSIA
MATERIAL - CONSTRUCTION	300 Series Cres 300 Series Cres
CONNECTION -  INLET  OUTLET	
MASS	0.68 kg ( 1.5 1bm)
OTHER SIGNIFICANT CHARACTERISTICS	

MANUFACTURER	Vacco Industries	(46)
PART NUMBER _	F1D10064-01	
		COMSAT, Intelsat IV Communication Satellite
PROGRAM		Communication Saterific
	~~	<b>USAF</b>
CONTRACTING A	GENCY	
PRIME CONTRACT	TOR	Hughes Aircraft
TRIME CONTINU		
STATUS		
QUALIFIED.	.,,,,,	Yes
		Yes
LAUNCH VEHI	ICLE	Atlas Centaur
		도움 하는 것이 되는 것이 되었다. 그런 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은
AVAILABILITY		8 to 10 weeks
COST/PROCUREME	ENT INFORMATION	보고 있다. 그런 그런 그런 그런 그런 그런 그는 그런 그는 그런

TYPE		) Inline filter as	sembly
DESIGN FLOW MEDIA	N <sub>2</sub> H <sub>4</sub>		
RATING	10	MICRONS ABSOLUT	` <b>E</b>
RATED FLOW @ PRESSURE DIFFERENTIAL		$\begin{array}{c c} N_2 H_4 & & & \text{N/cm}^2, \\ \hline N_2 H_4 & & & \text{PSID}, \\ \end{array}$	°C °F)
CAPACITY @ MAX. PRESSURE DIFFERENTIAL	gms @	N/cm <sup>2</sup> (	PSID)
PRESSURES -  OPERATING  PROOF  BURST  MIN. ELEMENT COLLAPSE DIFFERENTIAL	$\frac{320}{837.7} \frac{\text{N/cm}^2}{\text{N/cm}^2}$	(	
OPERATING TEMPERATURE RANGE			
EXTERNAL LEAKAGE	scc/s of	@ N/cm <sup>2</sup>	(@ PSIA
MATERIAL -  CONSTRUCTION  ELEMENT			
CONNECTION -	1/4 o.d. tube x	.020 wall	
OUTLET		( 0.3 lbm)	

OTHER SIGNIFICANT CHARACTERISTICS .....

MANUFACTURER	Vacco Industries	s (45,46)
PART NUMBER _	F1D10182-01 and	-02
DDOODAM		Communications Technology Satellite
FRUURAM		
CONTRACTING AG	GENCY	
PRIME CONTRACT	TOR	Hamilton Standard
		네 그 아내는 이 나마는 이렇게 하셨다면 하는 호텔
STATUS		
QUALIFIED	,	Yes
		Yes
	ICLE	
		사람이 되었다. 보이 가장이 하는 사람이 되었다. 그렇게 되었다는 것이 가능한 것이 되었다. 500 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 10
AVAILABILITY	num Bolinin kananan kanan kanan	8 to 10 weeks
		본었다면 한 그리는 그들은 사람들은 사람들이 되었다.
COST/PROCUREME	ENT INFORMATION	
		는 경기를 받는 것이 되었다. 하는 것은 것이 하는 것이 되었다. 그런
		사람들은 경기 전에 가장 보면 되었다. 대한 경기 전에 발표되었다. 기계 전에 가장 보고 있는 것이 되었다. 그는 사람들은 경기 전에 되었다.

TYPE	.004763 m (.1875 in) Inline Filter Assembly
DESIGN FLOW MEDIA	Hydrazine
RATING	MICRONS ABSOLUTE
RATED FLOW @ PRESSURE DIFFERENTIAL	
CAPACITY @ MAX. PRESSURE DIFFERENTIAL	
PRESSURES - OPERATING	$\frac{1092}{273}$ N/cm <sup>2</sup> ( $\frac{1584}{396}$ PSIA)
OPERATING TEMPERATURE RANGE	$+4.4 \text{ to } ^{71.1}_{\circ_{c}}$ (+40 to $^{160}_{\circ_{F}}$ )
EXTERNAL LEAKAGE	$1 \times 10^{-6}$ scc/s of He $_{\odot}$ 217 N/cm <sup>2</sup> ( $_{\odot}$ 315 PSIA)
MATERIAL - CONSTRUCTION	Titanium 316 L Stainless Steel (F.H.)
CONNECTION -	3/16 o.d. tube x .016 wall
OUTLET	same
MASS	.10 kg (23 lbm)
OTHER SIGNIFICANT CHARACTERISTICS	

-01 Dynamic Unit -02 Production Unit

MANUFACTURER	Vacco Industries	(46)
PART NUMBER _	F1D10151-01	
		Communications Tochnology Setallite (CTS)
PROGRAM		Communications Technology Satellite (CTS)
CONTRACTING AC	BENCY	Communications Research Center, Canada
PRIME CONTRACT	ror	Hamilton Standard
STATUS		
		Yes
LAUNCH VEH	CLE	
AVAILABILITY		8 to 10 weeks
COST/PROCUREME	ENT INFORMATION	

TYPE	.006 m (.25 in) Inline Filter Assembly
DESIGN FLOW MEDIA	Anhydrous Hydrazine
RATING	MICRONS ABSOLUTE
RATED FLOW @ PRESSURE DIFFERENTIAL	
CAPACITY @ MAX. PRESSURE DIFFERENTIAL	gms @ N/cm <sup>2</sup> ( PSID)
PRESSURES -  OPERATING  PROOF  BURST  MIN. ELEMENT COLLAPSE DIFFERENTIAL	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
OPERATING TEMPERATURE RANGE	°c (°F) Ambient
EXTERNAL LEAKAGE	scc/s of @ N/cm <sup>2</sup> (@ PSIA)
MATERIAL - CONSTRUCTION	304 L Stainless Steel Same
CONNECTION -	1/4 tube x .020 wall
OUTLET	<u>Same</u> 50
MASS	kg (1bm)

OTHER SIGNIFICANT CHARACTERISTICS

MANUFACTURER	Wintec	(54)	2.0 max -
			1.50 TYP
PART NUMBER	15241-685		
	(TRW P/N EQ1-464)		

PROGRAM	Atmosphere Explorer
CONTRACTING AGENCY	NASA/GSFC
And the second s	
PRIME CONTRACTOR	RCA
STATUS	
QUALIFIED	Yes
FLOWN	
LAUNCH VEHICLE	Thor Delta
LAUNCH VEHICLE	
AVAILABILITY	
AVAILADILIII	
COST/PROCUREMENT INFORMATION	
COST/PROCUREMENT INFORMATION	
일이 얼마의 그렇게 하는 경우	

TYPE	Metal Mesh
DESIGN FLOW MEDIA	Hydrazine
RATING	1.5 MICRONS ABSOLUTE
RATED FLOW @ PRESSURE DIFFERENTIAL	$\frac{0.0009}{(0.02 \text{ lbm/sec of } \frac{\text{N}_2\text{H}_4}{\text{N}_2\text{H}_4} \text{ e} \frac{.68}{1.0} \text{ N/cm}^2, \frac{21}{70} \text{ o}_{\text{F}})}$
CAPACITY @ MAX. PRESSURE DIFFERENTIAL	0.25 gms @ 1.3 N/cm <sup>2</sup> ( 2.0 PSID)
PRESSURES -  OPERATING  PROOF  BURST  MIN. ELEMENT COLLAPSE DIFFERENTIAL	$\begin{array}{c cccccc} 413 & \text{N/cm}^2 & (& 600 & \text{PSIA}) \\ \hline 620 & \text{N/cm}^2 & (& 900 & \text{PSIA}) \\ \hline 1654 & \text{N/cm}^2 & (& 2400 & \text{PSIA}) \\ \hline 172 & \text{N/cm}^2 & (& 250 & \text{PSIA}) \\ \end{array}$
OPERATING TEMPERATURE RANGE	5 to 50 °c (41 to 122 °f)
EXTERNAL LEAKAGE	1x10 <sup>-7</sup> scc/s of He = 517 N/cm <sup>2</sup> (@ 750 PSIA)
CONSTRUCTION	All stainless welded-in-line Twilled dutch double weave wire cloth
CONNECTION - INLET	0.250 o.d. s.s. tube brazed into system using Aeroquip process
MASS	0.1 ( 0.4 lbm)

OTHER SIGNIFICANT CHARACTERISTICS .....

MANUFACTURER	Brunswick Corp. Wintec Div.	(24)		
PART NUMBER _	15241-647			
TAKI NOMBEN -				
PROGRAM		777		
CONTRACTING A	GENCY	USAF		
PRIME CONTRACT	TOR		 	
STATUS				
QUALIFIED.		Yes		•
FLOWN		Yes		
LAUNCH VEH				
	and the second of the second o			
AVAILABILITY.				
COST/PROCUREME	ENT INFORMATION			

TYPE	Woven wire	
DESIGN FLOW MEDIA	N <sub>2</sub> H <sub>4</sub>	
RATING	15	MICRONS ABSOLUTE
RATED FLOW @ PRESSURE DIFFERENTIAL	$\frac{.02}{(05)} \frac{\text{kg/sec of } N_2^{\text{H}_2}}{\text{lbm/sec of } N_2^{\text{H}_2}}$	$\frac{4}{4}$ @ $\frac{6.8}{1.0}$ N/cm <sup>2</sup> , $\frac{21}{70}$ °C PSID, $\frac{70}{10}$ °F)
CAPACITY @ MAX. PRESSURE DIFFERENTIAL	gms @	_ N/cm <sup>2</sup> ( PSID)
PRESSURES -  OPERATING	701 N/cm <sup>2</sup> (	
OPERATING TEMPERATURE RANGE	°c (	<b>o</b> F)
EXTERNAL LEAKAGE	1 x 10 -7 scc/s of <u>He</u>	_ @ N/cm <sup>2</sup> (@ PSIA
MATERIAL - CONSTRUCTION		
CONNECTION - INLET OUTLET		
MASS	0_1 kg	(0_41bm)
OTHER SIGNIFICANT CHARACTERISTICS		

MANUFACTURER	Vacco Industries	s (46)
PART NUMBER	E-81916-4-15	
PROGRAM		Titan III
CONTRACTING AC	GENCY	
PRIME CONTRACT	TOR	Martin Marietta Corp.
TRIFIC OURTHURS		
STATUS		
		Yes
	• • • • • • • • • • • • • • • • • • • •	Yes
LAUNCH VEH	ICLE	
AVAILABILITY.		8 to 10 weeks
		그리다 그래도 내는 사람들에 살아 하다면 하다 하다 하다.
COST/PROCUREME	ENT INFORMATION	
		보고 있는 시간 하는 경기 가장 하고 있다. 그는 그를 다 되었다. 그를

TYPE	Element Assembly	
DESIGN FLOW MEDIA	Hydrazine	
RATING	taran da antara da a	
RATED FLOW @ PRESSURE DIFFERENTIAL	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	°C °F)
CAPACITY @ MAX. PRESSURE DIFFERENT!AL	gms &N/cm <sup>2</sup> (PSID)	
PRESSURES -  OPERATING  PROOF  BURST  MIN. ELEMENT COLLAPSE DIFFERENTIAL	275 N/cm <sup>2</sup> ( 400 PSIA) 460 N/cm <sup>2</sup> ( 668 PSIA) 612 N/cm <sup>2</sup> ( 888 PSIA) N/cm <sup>2</sup> ( PSIA)	
OPERATING TEMPERATURE RANGE	°C (°F)	
EXTERNAL LEAKAGE	scc/s of N/cm <sup>2</sup> (@ 303 Stainless Steel	PSIA
ELEMENT		
CONNECTION - INLET	Special cartridge	
MASS	kg (75lbm)	
OTHER SIGNIFICANT CHARACTERISTICS		

MANUFACTURER _	Brunswick Corp Wintec Div.	(24)
PART NUMBER	15241-526	
TAN NORDEN		
PROGRAM		Apollo .
CONTRACTING AGE	NCY	NASA
PRIME CONTRACTO	R	
STATUS		
QUALIFIED		Yes
FLOWN		Yes
LAUNCH VEHIC	LE	Saturn
AVAILABILITY		
COST/PROCUREMEN	T INFORMATION	

TYPE	Woven wire		
DESIGN FLOW MEDIA	N <sub>2</sub> H <sub>4</sub>		
RATING	15	MICRONS ABSOL	UTE
RATED FLOW @ PRESSURE DIFFERENTIAL			
CAPACITY @ MAX. PRESSURE DIFFERENTIAL	gms @	N/cm <sup>2</sup> (	PSID)
PRESSURES -  OPERATING  PROOF  BURST  MIN. ELEMENT COLLAPSE DIFFERENTIAL	$\frac{268}{355}$ N/cm <sup>2</sup>		
OPERATING TEMPERATURE RANGE	°c	(o <sub>F</sub> )	
EXTERNAL LEAKAGE	scc/s of		2 (@ PSIA
MATERIAL - CONSTRUCTION	MC-999-0058		
ELEMENT	300 Series Cr	es	
CONNECTION - INLET OUTLET	Tube .631 c	o.d.	
MASS	en e		

OTHER SIGNIFICANT CHARACTERISTICS ....

MANUFACTURER	Brunswick Corp. Wintec Div.	(24)
PART NUMBER	15241-525	
	en en de de la companya de la compa La companya de la co	
PROGRAM		Apollo
CONTRACTING AGE	NCY	NASA
PRIME CONTRACTO	R	
		생활의 어울 있는 일본 경험이 있는 경험이는 경험한 학교
STATUS		원으로 이 경험이 불고있다. 벌레이탈 그 그들고 어느, 살고
OUALIFIED		Yes
		Yes
		Saturn
LAUNCH VEHIC	LE	
AVAILABILITY		
		그들은 함께 되는 그는 사람들은 이 승규를 가고 있는데 그렇다.
COST/PROCUREMEN	T INFORMATION	
		요즘 보고 있는데 사람들이 하는 경우를 가장 되었다. 이 전에 가장 함께 함께 함께 되었다. 요즘 하는 사람들이 되었다.

TYPE	Woven wire	_
DESIGN FLOW MEDIA	N <sub>2</sub> O <sub>4</sub>	
RATING	MICRONS ABSOLUTE	
RATED FLOW @ PRESSURE DIFFERENTIAL	.217 kg/sec of @ N/cm <sup>2</sup> , °C (.480 lbm/sec of @ PSID, °F)	
CAPACITY @ MAX. PRESSURE DIFFERENTIAL	gms @N/cm <sup>2</sup> (PSID)	
PRESSURES - OPERATING PROOF BURST MIN. ELEMENT COLLAPSE DIFFERENTIAL		
OPERATING TEMPERATURE RANGE	°C (°F)	
EXTERNAL LEAKAGE	N/A scc/s of @N/cm <sup>2</sup> (@ PS	IA'
MATERIAL - CONSTRUCTION		
CONNECTION -		
OUTLET		_
MASS	kg (	

OTHER SIGNIFICANT CHARACTERISTICS .....

MANUFACTURER	Brunswick Corp. Wintec Div.	(24)
PART NUMBER _	15312-501-1	
PROGRAM		_P95 Satellite"
CONTRACTING AC	GENCY	<u>USAF</u>
CONTRACTING AC		USAF
PRIME CONTRACT STATUS QUALIFIED	ror	Yes
PRIME CONTRACT STATUS QUALIFIED FLOWN	ror	
PRIME CONTRACT STATUS QUALIFIED FLOWN LAUNCH VEHI	ΓΟR	Yes
PRIME CONTRACT STATUS QUALIFIED FLOWN LAUNCH VEHI	CLE	Yes
PRIME CONTRACT STATUS QUALIFIED FLOWN LAUNCH VEHI	CLE	Yes

TYPE	Woven wire				
DESIGN FLOW MEDIA	No.H.				
RATING		MI	CRONS ABSOLU	TE	
RATED FLOW @ PRESSURE DIFFERENTIAL	.034 kg/sec o	of N2H4 & -	$\frac{1}{2} \text{ N/cm}^2,$ $\frac{2}{2} \text{ PSID,}$	21 70	°C °F)
CAPACITY @ MAX. PRESSURE DIFFERENTIAL	gms @	N/cm <sup>2</sup>	(	_ PSID)	
PRESSURES -  OPERATING  PROOF  BURST  MIN. ELEMENT COLLAPSE DIFFERENTIAL	286 N/cm <sup>2</sup> 630 N/cm <sup>2</sup> 837 N/cm <sup>2</sup> 275 N/cm <sup>2</sup>	( <u>915</u> )			
OPERATING TEMPERATURE RANGE	°c	GN <sub>2</sub>	· ·		
MATERIAL - CONSTRUCTION	300 Series C	res	N/Cm <sup>2</sup>	( •	P31A
CONNECTION -	300 Series C AN-818-GJ "B"		0819 <b>-</b> GJ s	leeve	
OUTLET	AN-818-GJ "B"	nut & MS2	0819 <b>-</b> GJ s	leeve	
MASS	0.34 kg	(_0	.75 lbm)		

OTHER SIGNIFICANT CHARACTERISTICS .....

<sup>\*</sup>No bubbles @ 286 N/cm<sup>2</sup> (415 psia) submerged in Freon TF for 2 minutes.

MANUFACTURER	Brunswick Corp. Wintec Division	(24)			
PART NUMBER _	15312-501-3		<b>-</b>		
en en 1941 en en 1944 en 1945. Frank in 1944 en 1945					
PROGRAM		P95 Satell	<u>ite</u>		
CONTRACTING AG	ENCY	USAF		•	
PRIME CONTRACT	OR				
STATUS					
		Yes			
FLOWN		Yes			
	CLE				
AVAILABILITY					
AAAT /BRAANDENE	NT INCOMATION				
CUST/PROCUREME	NT INFORMATION				

TYPE	Woven wire	·
	$^{\mathrm{N}}2^{\mathrm{H}}4$	
DESIGN FLOW MEDIA	60 T	<del></del>
RATING	MICRONS ABSOLUTE	
RATED FLOW @ PRESSURE DIFFERENTIAL		
CAPACITY @ MAX. PRESSURE DIFFERENTIAL	gms & N/cm <sup>2</sup> ( PSID)	
PRESSURES - OPERATING PROOF BURST MIN. ELEMENT COLLAPSE DIFFERENTIAL	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
OPERATING TEMPERATURE RANGE	CN	DC 1A
EXIERNAL LEARAGE	SCC/S OI M/Cm (#	ro in
MATERIAL -		
CONSTRUCTION	300 Series Cres	
ELEMENT	300 Series Cres	
ELEMEN!	Jou Delles Cles	
CONNECTION -		
INLET	Tube .375 o.d.	
OUTLET		
MASS	kg (lbm)	

OTHER SIGNIFICANT CHARACTERISTICS .....

<sup>\*</sup>No bubbles @ 286 N/cm<sup>2</sup> (415 psia) submerged in Freon TF for 2 minutes.

MANUFACTURER	Vacco Industria	es (46)
PANOTACTOREN		
#1 "1" 		
	m1m10106 01	
PART NUMBER _	F1D10106-01	
PROGRAM		ERTS
CONTRACTING AG	BENCY	_NASA
en e		Rocket Research
PRIME CONTRACT	ror	ROCKEL RESEARCH
	Andrew Commencer	
STATUS		
QUALIFIED		<u>Yes</u>
FLOWN		Yes the first of the second of
LAUNCH VEHI	CLE	
and in the control of	en e	
AVAILABILITY		8 to 10 weeks
COST/PROCUREME	NT INFORMATION	

TYPE	Inline	Filter	Accembly		
	N <sub>2</sub> H <sub>4</sub>	FILCEL	Assembly		
DESIGN FLOW MEDIA					
RATING	25		МІ	CRONS ABSOLUT	<b>E</b>
RATED FLOW @ PRESSURE DIFFERENTIAL				N/cm <sup>2</sup> , PSID, _	
CAPACITY @ MAX. PRESSURE DIFFERENTIAL		.gms @	N/cm <sup>2</sup>		PSID)
PRESSURES - OPERATING PROOF BURST MIN. ELEMENT COLLAPSE DIFFERENTIAL	682 910	N/cm <sup>2</sup>	( <u>990</u> ( <u>1320</u>		
PPERATING TEMPERATURE RANGE		°c	(	_oF) Amb	ient
EXTERNAL LEAKAGE	· —————	scc/s of	<u> </u>	N/cm <sup>2</sup>	(@ PSIA)
MATERIAL - CONSTRUCTION	304 Sta	inless (	Steel		
CONNECTION -	A				
INLET					
OUTLET		kg	(	l bm)	

OTHER SIGNIFICANT CHARACTERISTICS .....

(46)

MANUFACTURER Vacco Industries

아이라 불자들이 하는 아직이라고 되었다. 이 네트 모모 하는
선물하다면 하다 하는 얼마는 그리는 사람들이 얼마 없다.
이 그 살림을 하고 하는 것이 없는 사람들이 없는 것이 되었다.
이 가능한 동생이 있는데 그들이 그래요요. 그는 것도 하는데 말이 되는 것이 하고 있는데 하는데 함. 요. 그들은 하는 것은 그들이 그 이름이 된다는데 하는데 하는데 되는데 하는데 되었다.
아이아 되는 아이트로 하고 모양을 모양한 이름을 잃었다.
요하는데 보이 모든 모든 그렇게 되는데 하면 얼마를 보고.
ERB
그는 말하는 것은 살살을 보고 있는 수는 그리고 있다. 그는 일반 주시다
NASA
어린 아내는 중요 있다는 그 나는 그들은 제 모든 경치 모든 경기로 했다.
Rocket Research
어린 등의 불편한 후보들이 속해 놓는데 모델라고 밝아내고 하는 것
물리 된 그림 모모 보는 글을 들었다.
Yes
Yes
<u> - 일본 회사 : 10 전 회                                 </u>
그림 끝내는 한 곳이 이 없이 생물을 다면서 가는 것 같아. 나는 이 사람들은
8-10 weeks
. 그 이 에 시에 가는 이 회사 가게 된 이 있는 것을 때 되었다. 그는 그 전에 가는 것을 모르는 것을 모르는 것 같다. 그리고 얼마를 하는 것이 있다. 그렇게 한 경기를 받는 것 같은 것을 받는 것이 되었다. 그리고 한 글로그리고
경기 경기 및 기업
사용실론이 회전 문제 역시하는 모든 아이트들은 이러스프로 바로 하나는
보는 것도 되었다. 그런 그런 그런 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은

TYPE	Inline Filter Ass	emb1y	
DESIGN FLOW MEDIA			<del></del>
RATING		MICRONS ABSOLUTE	
RATED FLOW @ PRESSURE DIFFERENTIAL		@ N/cm <sup>2</sup> , PSID,	°C °F)
CAPACITY @ MAX. PRESSURE DIFFERENTIAL	gms @	N/cm <sup>2</sup> ( PSID)	
PRESSURES -  OPERATING  PROOF  BURST  MIN. ELEMENT COLLAPSE DIFFERENTIAL  OPERATING TEMPERATURE RANGE  EXTERNAL LEAKAGE	910 N/cm <sup>2</sup> ( 1820 N/cm <sup>2</sup> ( N/cm <sup>2</sup> ( ( )°C (	PSIA)PSIA)OF) Ambient	PSIA)
MATERIAL -  CONSTRUCTION		<b>e1</b>	
CONNECTION - INLET OUTLET			
MASS	kg	(lbm)	

OTHER SIGNIFICANT CHARACTERISTICS .....

Vacco Industries (46)

MANUFACTURER	Vacco Industri	es (46)
PART NUMBER _	F1D10093-01 an	d -02
DDACDAN		Mariner and Viking
PRUGRAM	***********	
CONTRACTING AG	ENCY	는 이 사람들은 것이 되었다. 그렇게 되는 것은 이 선생님이 들어 전혀 보고 생각을 받았다는 이 전 사람들은 사람들이 되었다.
		함께 한 보다 많이 얼마나 되는 다리는 얼마를 살았다.
PRIME CONTRACT	OR	Martin Marietta Corp.
STATUS		Yes
•		Yes
	CLE	Atlas Centaur
CAUNCH VEIL		
AVAILABILITY		8 to 10 weeks
		게 되었는 이렇게 한 경험을 보고 통해 한 번째 등록 등록 기계를 가져왔다는 것이 되었다. 등 회사는 이렇게 하는 것이 되었다.
COST/PROCUREME	NT INFORMATION	

TYPE	Inline Filter Assembly		
DESIGN FLOW MEDIA	Nitrogen Tetroxide		
RATING	MICRONS ABSOLUTE		
RATED FLOW @ PRESSURE DIFFERENTIAL	kg/sec of MMH		
CAPACITY . MAX. PRESSURE DIFFERENTIAL	gms eN/cm <sup>2</sup> (PSID)		
PRESSURES -  OPERATING  PROOF  BURST  MIN. ELEMENT COLLAPSE DIFFERENTIAL	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		
MATERIAL -	°C (°F) Ambientscc/s of@N/cm² (@PSIA)  304 L Stainless Steel		
CONSTRUCTION	Same		
CONNECTION -	.500 o.d. tube x .049 wall		
	Same		
MASS	kg (1.6lbm)		
OTHER SIGNIFICANT CHARACTERISTICS			
Overall Length	End Connections		
-01 6.300	.500 o.d. tube x .049 wall		
-02 7-1/4	AN818-8J		

MANUFACTURER	Winter Div.	(24)	
PART NUMBER	15228 <b>-5</b> 72		

PROGRAM	Viking
CONTRACTING AGENCY	NASA
PRIME CONTRACTOR	마르크 (1985년 1985년 - 198 - 1985년 - 1985
STATUS QUALIFIED	Yes
FLOWNLAUNCH VEHICLE	No
AVAILABILITY	
COST/PROCUREMENT INFORMATION	고 있다면서 있는데 말이를 하고 있는데 말이면 된 때에 되었다. 그는 그들이 후로 하는데 되었다. 하는 그리고 있는데 하는 사람들이 가고 있다. 그 모양 목욕을 만드고 있다. 이 사람들이 걸린다.
VVOI/I NOVOKEMENI INIVAMALIONI.	
생활성 등에 가는 소프를 통해 있는 등 전환성 전환 보다 생활성이었다. 생활 경기에 발표하는 상황 경기를 하는 것이 되는 것이 없다.	성하는 보다 보는 것이 되었다. 그 사람들은 보다 되었다면 되었다는 것이 되었다. 그런

TYPE		
DESIGN FLOW MEDIA	<sup>N</sup> 2 <sup>H</sup> 4	
RATING	35	MICRONS ABSOLUTE
RATED FLOW @ PRESSURE DIFFERENTIAL	1.04 kg/sec of (2.30 lbm/sec of	$\begin{array}{c c} H_2O & 217 & \text{N/cm}^2, & 21 & \text{°c} \\ \hline H_2O & 315 & \text{PSID}, & 70 & \text{°F}) \end{array}$
CAPACITY @ MAX. PRESSURE DIFFERENTIAL	gms @	N/cm <sup>2</sup> ( PSID)
PRESSURES -  OPERATING  PROOF  BURST  MIN. ELEMENT COLLAPSE DIFFERENTIAL	754 N/cm <sup>2</sup>	( <u>555</u> PSIA) ( <u>825</u> PSIA) ( <u>1095</u> PSIA) ( <u>540</u> PSIA)
OPERATING TEMPERATURE RANGE	o <sub>c</sub>	( <u> </u>
EXTERNAL LEAKAGE	N/A scc/s of	N/cm² (@PSIA
MATERIAL -  CONSTRUCTION	300 Series Cre	
CONNECTION -		
OUTLET  MACS  OTHER SIGNIFICANT CHARACTERISTICS		

## ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.3 VALVE, PROPELLANT ISOLATION

MANUFACTURER _	wright compo	(23)
PART NUMBER	15447	
	NCY	NRL Radiation Experiment  Naval Research Laboratory
	R	
STATUS		Yes
FLOWN	 LE	Yes
AVAILABILITY		_18-24 weeks ARO
COST/PROCUREMENT	T INFORMATION	
등 없는 공기가 얼마가 하다	나이다. 다면 덕분인 나를 하는지만 시작	이 마음이 되면 보고 한다면 되어 한다는 때 아들이 들었다면서 보고 있다는 것이 되는 것이다. 그는 것이 나를 보고 있다.

#### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.3 VALVE, PROPELLANT ISOLATION

TYPE	Co-axial
DESIGN FLOW MEDIA	NH <sub>3</sub> (liquid or gaseous)
RATED FLOW AT PRESSURE DIFFERENTIAL	kg/sec @N/cm <sup>2</sup> ,°c
	$\frac{(\frac{1 \text{bm/sec } 2}{\text{equiv. of } 0.018"} \frac{\text{PSID}}{\text{dia}} (C_{D} = 0.8)}^{\text{PSID}}$
RESPONSE - OPEN	
CLOSE	(PSIA_INLET_PRESSURE,OF)OC
	(PSIA,OF) Ball, Detenting
LATCHING MECHANISM - TYPE	July Determing
TO OPEN	50 ms @ 24 Vdc (MAXIMUM)
TO CLOSE	
OPEN/CLOSED POSITION INDICATION SWITCH	No No
INTEGRAL FILTER	None MICRONS ABSOLUTE
LIFE	$\frac{2 \times 10^6}{\text{CYCLES}}$
PRESSURES - OPERATING	0-251 N/cm <sup>2</sup> (_0-365PSIA)
PR00F	그 그는 사람들이 가는 하를 살아보고 있다면 하는 사람들이 되었습니다.
BURST	$\frac{527}{\text{N/cm}^2} \text{N/cm}^2 \qquad (\frac{765}{\text{PSIA}})$
REVERSE CRACKING	<u>N/A</u> N/cm <sup>2</sup> (PSIA)
OPERATING TEMPERATURE RANGE	o_o <sub>C</sub> ( <u>32-140</u> o <sub>F</sub> )
LEAKAGE -	007
INTERNAL	.007 scc/hr 0F He @ 137 N/cm² (PSIA) 200 psid
EXTERNAL	
SUPPLY VOLTAGE RANGE	22-26 Vdc
POWER	3 WATTS MAX @ 24 Vdc, 24 °C ( 76 °F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT PROPELLANT FLOW	12 Vdc pull in
DIELECTRIC STRENGTH	50 MA MAX. CURRENT LEAKAGE . 500 VOLTS rms. 60 Hz
INSULATION RESISTANCE	_100 MΩ @ 500 Vdc
MAXIMUM VALVE MAGNETIC FIELD DENSITY -	nT@lm(GAMMA @6 in)
DE-ENERGIZED	nT @ l m ( GAMMA @ 6 in)
AATERIAL -	고기 기를 받는 이번 사람들이 보고 있다. 이번 사람들이 기교를 있는 이 동안 보고 있는 사람들을 통해 가게 되는 수 있다.
CONSTRUCTION	Stainless Steel EPR 515-8
MENTAL CARREST CONTRACTOR CONTRAC	

#### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET

4.2.3 VALVE, PROPELLANT ISOLATION continued

P/N 15447

CONNECTION -	
INLET	Special Flange
OUTLET	Special Flange
ELECTRICAL	JTIH-8-3p (101) 2 Reqd
beautiful and	
LAUNCH ENVIRONMENT - RANDOM VIBRATION -	
WIDE BAND LEVEL	G <sub>rms</sub>
MAX POWER SPECTRAL DENSITY	G <sup>2</sup> /Hz from to Hz
SINUSOIDAL VIBRATION -	
SWEEP RATE	OCTAVES/min
MAX G LEVEL (0-PEAK)	AT Hz
	ATHz
	AT Hz
ACOUSTIC VIBRATION -	
OVERALL SOUND PRESSURE LEVEL	dB FOR MINUTES
SHOCK RESPONSE -	
WAVE FORM PEAK-LEVEL OF	G's FORsec
SHOCK SPECTRUM-PEAK RESPONSE OF	G's ATHz
AMPLIFICATION FACTOR (Q)	
STATIC ACCELERATION	
MASS	
OTHER SIGNIFICANT CHARACTERISTICS	

ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.3 VALVE, PROPELLANT ISOLATION

MANUFACTURER Wright Compo	onents, Inc.	
	(23)	
PART NUMBER 15512-1		
PROGRAM	SOLRAD-X	
CONTRACTING AGENCY	Naval Research Laboratory	
PRIME CONTRACTOR		
	고대한 라고 된 교회 회가 인물 그리고 하고 있다.	
STATUS	Yes	
QUALIFIED	그 사람들은 근처리 사람이 승규가 하는 사람들이 살아 있다는 그 것이 있다. 그는 사람들에 가는 그 모든 그를	
FLOWN	Yes	
QUALIFIED	그 사람들은 근처리 사람이 승규가 하는 사람들이 살아 있다는 그 것이 있다. 그는 사람들에 가는 그 모든 그를	
QUALIFIED  FLOWN  LAUNCH VEHICLE	Yes	
QUALIFIED	Yes	
QUALIFIED  FLOWN  LAUNCH VEHICLE  AVAILABILITY	Yes 18-24 weeks ARO	
QUALIFIED  FLOWN  LAUNCH VEHICLE	Yes 18-24 weeks ARO	

	Coaxial, solenoid, detenting, 2-way
TYPE	
DESIGN FLOW MEDIA	$\frac{N_2H_4}{N_1}$ , $\frac{NH_3}{NH_3}$
RATED FLOW AT PRESSURE DIFFERENTIAL	kg/sec @ N/cm <sup>2</sup> ,oc
	$(\underline{\text{din.}} \text{lbm/sec e} \underline{\text{PSID}}, \underline{\text{pSID}}, \underline{\text{of }} \text{of } \text{p})$ equiv. to 0.018 in orif. dia. @ $C_D = 0.65$
RESPONSE -	
OPEN	50 ms @ 24 Vdc, 275 N/cm2 INLET PRESSURE, 24 C
	(400 PSIA INLET PRESSURE, 76 C
CLOSE	$\frac{50}{\text{ms}} = \frac{24}{\text{Vdc}}, \frac{275}{120} \text{N/cm}^2, \frac{24}{120} \text{°c}$
	( <u>400</u> PSIA, <u>76</u> °F)
LATCHING MECHANISM - TYPE	Ball detenting
MINIMUM ELECTRICAL PULSE WIDTH -	
TO OPEN	
TO CLOSE	50 ms @ 24 Vdc (MAXIMUM)
OPEN/CLOSED POSITION INDICATION SWITCH	No
INTEGRAL FILTER	None MICRONS ABSOLUTE
LIFE	1000 CYCLES
PRESSURES -	
OPERATING	$\frac{86.1-275_{\text{N/cm}^2}}{(125-400)}$
PROOF	689 N/cm <sup>2</sup> ( 1000 PSIA)
BURST	1034 N/cm <sup>2</sup> ( 1500 PSIA)
REVERSE CRACKING	
DPERATING TEMPERATURE RANGE	$\frac{N/A}{-23 - +6^{\circ}_{c} \cdot 7} \qquad ({(-10 - +^{145})_{F}})$
LEAKAGE -	.003 scc/hr of He a N/cm² ( PSIA)
EXTERNAL	.003 scc/hr 0F He  N/cm² ( PSIA)  1 x 10 scc/s 0F He  N/cm² ( PSIA)
SUPPLY VOLTAGE RANGE	
**************************************	0.42 WATTS MAX @ 12 Vdc, 24 °C ( 76 °F
MAXIMUM CONTINUOUS VOLTAGE WITHOUT	12 7 Na mail 1 3 million 1
PROPELLANT FLOW	
A second control of the	50 MA MAX. CURRENT LEAKAGE - 500 VOLTS rms, 60 H
NSULATION RESISTANCE	100 MΩ ® 300 Age
AXIMUM VALVE MAGNETIC FIELD DENSITY -	일종 하고 된다. 그 그를 만들어 다시다. 그 시작 소개를 하는데.
	nT @ 1 m ( GAMMA @ 6 in)
DE-ENERGIZED	nT @ I m ( GAMMA @ 6 in)
ATERIAL -	Stainless steel
CONSTRUCTION	ADD 100 rap FIF 0
SEATS	AFE-102; EPR 515-8

### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.3 VALVE, PROPELLANT ISOLATION continued P/N 15512-1

CONNECTION -					
INLET	Specia	l flange			
OUTLET	Specia	l flange			
ELECTRICAL	TTTH-8	-303			
ELECTRICAL	<u> </u>				···············
LAUNCH ENVIRONMENT - RANDOM VIBRATION -					
WIDE BAND LEVEL	·	_ Ġ			
MAX POWER SPECTRAL DENSITY			to	Нz	
SINUSCIDAL VIBRATION -					
SWEEP RATE					
MAX G LEVEL (0-PEAK)		_ AT H	Z		
		_ AT H			
	-	_AT H	Z		
ACOUSTIC VIBRATION -					
OVERALL SOUND PRESSURE LEVEL		_ dB FOR	MINUTES		
SHOCK RESPONSE -					
WAVE FORM PEAK-LEVEL OF		GIA EMP			
SHOCK SPECTRUM-PEAK RESPONSE OF			HZ		
AMPLIFICATION FACTOR (Q)					
STATIC ACCELERATION		G's			
MASS	0.15		0.34		
MASS		_ Kg (_		. ( DM)	
OTHER SIGNIFICANT CHARACTERISTICS					
	the control of the co				

MANUFACTURER Wright Components, Inc. (23)

10 To		54 SS 41 L CC			
DADT	NUMBER	15625			
PARI	MUMDER	10020	 	 	

.1. Grand Name Baranch Tak
amilton Standard, Naval Research Lab,
TRW Systems, Avco Systems
es la la lata de la la
28
항목, 말살이 살다 하는 사람들이 살고 있었다. 물리는 얼굴 없는 살았다.
8-24 weeks ARO
등 등 이 물론이 되고 말하게 되는 것 같아. 가려면 가게 되었다는 것을 하게 되는 것이다. 하게 되는 것을 하게 말하게 되는 것도 된 것을 하게 되었다면 하고 있는 것을 받았다.
하는 것이 되었다. 이 경기 등에 가장 되었다. 이 경기를 받는 것이 되었다. 그는 것이 되었다. 그런 것이 되었다. 그는 그는 것이 되었다. 그런 그런 것이 되었다. 그런 그런 그런 그런 그런 것이 되었다. 그런 그런 것이 되었다.
는 물이 있는 것도 한 경험을 하고 있다. 이 등로 한 경기를 받는 것을 하는 것을 받는 것을 받는 것이 없는 것을 하는 것을 받는 것이다. 

TYPE	Co-axial
DESIGN FLOW MEDIA	Ammonia
	kg/sec @N/cm <sup>2</sup> ,°C
RATED FLOW AT PRESSURE DIFFERENTIAL	(lbm/sec @PSID,OF)
	Equiv. to 0.018 dia. $(C_D = 0.65)$
RESPONSE - OPEN	30 ms @ 24 Vdc, N/cm2 INLET PRESSURE, 23 °C
VIEW	(PSIA_INLET_PRESSURE, 75_OF
CLOSE	$30$ ms $24$ Vdc, $N/cm^2$ , $23$ °c
	(PSIA,75°F)
LATCHING MECHANISM - TYPE	Ball Detenting
MINIMUM ELECTRICAL PULSE WIDTH -	실어 1명하는 보통하는데 하는 보는 보이 말하는 다른데보다는 제네
TO OPEN	30 ms @ 24 Vdc (MAXIMUM)
TO CLOSE	30 ms @24_ Vdc (MAXIMUM)
OPEN/CLOSED POSITION INDICATION SWITCH	No
INTEGRAL FILTER	None MICRONS ABSOLUTE
LIFE	1000 CYCLES
PRESSURES -	
OPERATING	
PR00F	320 N/cm <sup>2</sup> ( <u>465</u> PSIA)
BURST	
REVERSE CRACKING	N/AN/cm <sup>2</sup> (PSIA)
OPERATING TEMPERATURE RANGE	
LEAKAGE -	
INTERNAL	.003 scc/hr 0F He @ 79.2 N/cm² ( 115 PSIA)
EXTERNAL	1.2x10 scc/s OF He @ 79.2 N/cm <sup>2</sup> ( 115 PSIA)
SUPPLY VOLTAGE RANGE	22-26 Vdc
OWER	10 WATTS MAX @ 24 Vdc, 24 °C ( 76 °F)
AXIMUM CONTINUOUS VOLTAGE WITHOUT	선육도 그는 경기가 있는 이 기계를 잃었다는데 가는 다시는
PROPELLANT FLOW	16 Vdc pull in
DIELECTRIC STRENGTH	0.5 MA MAX. CURRENT LEAKAGE . 500 VOLTS rms, 60 Hz
NSULATION RESISTANCE	10_ MΩ @100_ Vdc
AXIMUM VALVE MAGNETIC FIELD DENSITY -	그는 이는 문으로 동생들이라고 얼룩되면 먹는 그는 분인 생활을 받았다.
ENERGIZED	
DE-ENERGIZED	nT @ I m (GAMMA @ 6 in)
ATERIAL -	사는 눈이 있는 나무를 하고 하는 게 들게 들었다. 나라도 살아갔다. 그림
CONSTRUCTION	stainless steel
SEATS	AFE-102

CURRECTION -		
INLET		
OUTLET		
ELECTRICAL		
LAUNCH ENVIRONMENT - RANDOM VIBRATION -		
WIDE BAND LEVEL	G <sub>rms</sub>	
MAX POWER SPECTRAL DENSITY		toHz
SINUSOIDAL VIBRATION -		
SWEEP RATE	OCTAVES/min	
MAX G LEVEL (0-PEAK)	AT Hz	
	AT Hz	
	ATHz	
ACOUSTIC VIBRATION -		
OVERALL SOUND PRESSURE LEVEL	dB FOR	_ MINUTES
SHOCK RESPONSE -		그림 이렇게 되었다.
WAVE FORM PEAK-LEVEL OF	G's FOR	<b>50C</b>
SHOCK SPECTRUM-PEAK RESPONSE OF	and the second of the second o	
AMPLIFICATION FACTOR (Q)		
STATIC ACCELERATION		
		0 24
MASS	kg (	1 bm)
OTHER SIGNIFICANT CHARACTERISTICS		

MANUFACTURER	Wright	Components,	Inc. (23)	
	15675			
PAKI NUMBER				

PROGRAM	SOLRAD XI
CONTRACTING AGENCY	Naval Research Laboratory
PRIME CONTRACTOR	
STATUS	
QUALIFIED	그 등로는 사이를 가는 생각을 만들어 가능되어 들었다. 목에 이번 수 사가 있는데 본 사람들이 없다.
FLOWN	Yes
AVAILABILITY	18-24 weeks ARO
COST/PROCUREMENT INFORMATION	

#### 4.2.3 VALVE, PROPELLANT ISOLATION

	Co-axial, Solenoid, Detenting, 2-way
TYPE	
DESIGN FLOW MEDIA	
RATED FLOW AT PRESSURE DIFFERENTIAL	
	(lbm/sec ePSID,OF)
RESPONSE -	equiv. to 0.043 in. dia. $(C_D = 0.65)$
OPEN	30 ms @ 24 Vdc, N/cm2 INLET PRESSURE, 23 °C
	(PSIA_INLET_PRESSURE,75of
CLOSE	
	(PSIA,75°F)
LATCHING MECHANISM - TYPE	Ball Detenting
MINIMUM ELECTRICAL PULSE WIDTH -	
TO CLOSE	30 ms @24 Vdc (MAXIMUM)
OPEN/CLOSED POSITION INDICATION SWITCH	No
INTEGRAL FILTER	None MICRONS ABSOLUTE
LIFE	
PRESSURES -	
OPERATING	$\frac{206}{\text{N/cm}^2} \qquad (\frac{0-300}{\text{PSIA}})$
PROOF	310 N/cm <sup>2</sup> ( <u>450</u> PSIA)
BURST	413 N/cm <sup>2</sup> ( <u>600</u> PSIA)
REVERSE CRACKING	<u>N/A</u> N/cm <sup>2</sup> (PSIA)
OPERATING TEMPERATURE RANGE	-10-+60 °c (±14-+140 °F)
LEAKAGE -	
INTERNAL	0.55 scc/hr OF He @ 79.2 N/cm <sup>2</sup> ( 115 PSIA)
EXTERNAL	$1.0 \times 10^{-6}$ scc/s OF He @ 79.2 N/cm <sup>2</sup> ( 115 PSIA)
SUPPLY VOLTAGE RANGE	24-32 Vdc
POWER	18 WATTS MAX @ 28 Vdc, 24 °C ( 76 °F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT PROPELLANT FLOW	16 Vdc Pull-in
DIELECTRIC STRENGTH	50 MA MAX. CURRENT LEAKAGE 500 VOLTS rms, 60 Hz
INSULATION RESISTANCE	10 <sub>MΩ @</sub> _500_ <sub>Vdc</sub>
MAXIMUM VALVE MAGNETIC FIELD DENSITY -	nT @ ! m ( GAMMA @ 6 in)
DE-ENERGIZED	그는 사람들은 사람들은 사람들은 바다 그는 사람들은 사람들은 사람들이 가지 않는 사람들이 가장 사람들이 가장 가장 가장 하는 것은 것은 것이다.
MATERIAL -	가 되는 것이 되는 경기 회에 되는 것이 되는 것이 되는 것이 되는 것이 말로 생각되고 있다. 그래도 있다. 클로슨 사람들은 경기를 가득하는 것이 되는 것이 되는 것이 되는 것이 되는 것이 되는 것이다.
CONSTRUCTION	Stainless steel
SEATS	AFE-102

4.2.3 VALVE, PROPELLANT ISOLATION continued

P/N 15675

CONNECTION -		
INLET S	pecial flange	
OUTLET \$	pecial flange	
ELECTRICAL J		
LAUNCH ENVIRONMENT - RANDOM VIBRATION -		
WIDE BAND LEVEL	G <sub>rms</sub>	
MAX POWER SPECTRAL DENSITY	G <sup>2</sup> /Hz from	toHz
SINUSOIDAL VIBRATION -		
SWEEP RATE	OCTAVES/min	
MAX G LEVEL (O-PEAK)	AT Hz	
	AT Hz	
	AT Hz	
ACOUSTIC VIBRATION -		
OVERALL SOUND PRESSURE LEVEL	dB FOR	MINUTES
SHOCK RESPONSE -		
WAVE FORM PEAK-LEVEL OF	G's FOR	sec
SHOCK SPECTRUM-PEAK RESPONSE OF	G's AT	_Hz _ A _ The _ The _ Label _
AMPLIFICATION FACTOR (Q)		
STATIC ACCELERATION		
MASS	0.24 kg (_	0.35 1bm)
OTHER SIGNIFICANT CHARACTERISTICS		

MANUFACTURER	Consolidated Controls Corp				
	(20)	•			
PART NUMBER	669900				

PROGRAM	. Apollo
CONTRACTING AGENCY	
PRIME CONTRACTOR	Rockwell International
STATUS	
QUALIFIED	Yes
FLOWN	Yes
LAUNCH VEHICLE	Saturn
AVAILABILITY	180 days
COST/PROCUREMENT INFORMATION	\$10,000
	:
의문을 어디지는 것들은 상황을 받아 걸었다.	

TYPE	Solenoid Latching Valve
DESIGN FLOW MEDIA	
RATED FLOW AT PRESSURE DIFFERENTIAL	00006
RAILD I LOW ALL THEODORS	(0.005 lbm/sec e 25 PSID, 60 °F) He
RESPONSE - OPEN	
	COLL CHIET DECOURE OF
CLOSE	
	(PSIA,OF)
LATCHING MECHANISM - TYPE	Magnetic
MINIMUM ELECTRICAL PULSE WIDTH -	
	75 ms @ 18 Vdc (MAXIMUM)
TO CLOSE	
OPEN/CLOSED POSITION INDICATION SWITCH	Yes
INTEGRAL FILTER	None MICRONS ABSOLUTE
LIFE	8000 CYCLES
PRESSURES -	
OPERATING	0-3112 N/cm <sup>2</sup> ( $0-4514$ PSIA)
PROOF	4663 N/cm <sup>2</sup> ( <u>6764</u> PSIA)
BURST	6214 N/cm <sup>2</sup> ( <u>9014</u> PSIA)
REVERSE CRACKING	N/A N/cm <sup>2</sup> (PSIA)
OPERATING TEMPERATURE RANGE	$-1.1 - 65_{\sigma_c}^{5}$ (30-150 ° <sub>F</sub> )
LEAKAGE -	
INTERNAL	20 scc/hr 0F He @ 0-3112N/cm2 (0-4514 PSIA)
EXTERNAL	$\frac{20}{1 \times 10^{-6}} \text{scc/s}  0F  \frac{\text{He}}{\text{He}} = \frac{0-3112}{4663} \text{ N/cm}^2 \left(\frac{0-4514}{6764} \text{ PSIA}\right)$
SUPPLY VOLTAGE RANGE	18-33 vdc
OWER	2.1 amp SATTS WAX @ 30 Vdc, 21 °C ( 70 °F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT	
PROPELLANT FLOW	2 mA MAX. CURRENT LEAKAGE • 1000 VOLTS rms, 60 Hz
	그리고 모르는 하는 것은 전에 하는 모르는 사람들이 가지 않는 것이 되는 것이 되는 것이 되었다. 그는 사람들이 되는 것
NSULATION RESISTANCE	$-1000$ M $\Omega$ $\circ$ $-500$ Vdc
MAXIMUM VALVE MAGNETIC FIELD DENSITY -	nT @ I m ( GAMMA @ 6 in)
DE-ENERGIZED	nT@lm(GAMMA@6in)
ATERIAL -	그림으로 많이 먹는데 있네요 말씀하고 하면 하는 그리고 있었다면서 모양 말았다. 호
CONSTRUCTION	A286
SEATS	440 A

CONNECTION -	u _				
INLET	1/4 Braze 304L				
OUTLET	1/4 304L				
ELECTRICAL	Leads				
LAUNCH ENVIRONMENT - RANDOM VIBRATION -	16 /				
WIDE BAND LEVEL			25 (1997) 25 (1997)		
MAX POWER SPECTRAL DENSITY		G <sup>2</sup> /Hz from	20 to	2000 Hz	
SINUSOIDAL VIBRATION -					
SWEEP RATE		OCTAVES/min ATN/AH	<b>,</b>		
		AT H:			
		AT H:	Z		
ACOUSTIC VIBRATION - OVERALL SOUND PRESSURE LEVEL		_ dB FOR	MINUTE	:S ,	
WAVE FORM PEAK-LEVEL OF		GIO FOR	800		
SHOCK SPECTRUM-PEAK RESPONSE OF					
AMPLIFICATION FACTOR (Q)		_			
STATIC ACCELERATION		G's			
MASS	0.95	kg (_	2.1	1 bm)	
OTHER SIGNIFICANT CHARACTERISTICS					
Compatibility	Hydraz Helium Nitrog		de		
		Alcohol			

(37)

PART NUMBER	7455					
PROGRAM		Agena				
	,					
CONTRACTING AGENCY			A CONTRACTOR OF THE CONTRACTOR			
PRIME CONTRACTOR		Lockheed	Missiles	and Spac	e Cente	r
PRIME CONTRACTOR		Lockheed	Missiles :	and Spac	e Cente	r
PRIME CONTRACTOR			Missiles	and Spac	e Cente	•
PRIME CONTRACTOR		Lockheed Yes	Missiles	and Spac	e Cente	ŗ
PRIME CONTRACTOR			Missiles	and Spac	e Cente	<b>r</b>
PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN			Missiles	and Spac	e Cente	<b>r</b>
PRIME CONTRACTOR  STATUS  QUALIFIED			Missiles :	and Spac	e Cente	
PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE.			Missiles	and Spac	e Cente	<b>r</b>
PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN			Missiles	and Spac	e Cente	
PRIME CONTRACTOR  STATUS  QUALIFIED FLOWN LAUNCH VEHICLE.			Missiles	and Spac	e Cente	<b>r</b>
PRIME CONTRACTOR  STATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE.			Missiles	and Spac	e Cente	
PRIME CONTRACTOR  STATUS  QUALIFIED FLOWN LAUNCH VEHICLE.			Missiles	and Spac	e Cente	
PRIME CONTRACTOR  STATUS  QUALIFIED FLOWN LAUNCH VEHICLE.			Missiles	and Spac	e Cente	
PRIME CONTRACTOR  STATUS  QUALIFIED FLOWN LAUNCH VEHICLE.			Missiles	and Spac	e Cente	

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MANUFACTURER Whittaker Corp.

TYPE	Motor actuated slide gate valve	
DESIGN FLOW MEDIA	UDMH per MIL-D-25604, IRFNA per MIL-P-7254 Type I	III
RATED FLOW AT PRESSURE DIFFERENTIAL	.000333 kg/sec @ .34 N/cm <sup>2</sup> , _15 °c (.00735 lbm/sec @ .50 PSID, _60 °F)	
RESPONSE -		
OPEN	ms @Vdc,N/cm2 INLET PRESSURE,OC	
	(PSIA_INLET_PRESSURE,OF)ms @Vdc,N/cm <sup>2</sup> ,OC	
CLOSE	ms @vdc,N/cm-,c (PSIA,of)	
LATCHING MECHANISM - TYPE MINIMUM ELECTRICAL PULSE WIDTH -		
	ms @ Vdc (MAXIMUM)	
	ms @ Vdc (MAXIMUM)	
OPEN/CLOSED POSITION INDICATION SWITCH		
INTEGRAL FILTER	MICRONS ABSOLUTE	
LIFE	CYCLES	
PRESSURES -		H28-
OPERATING		
PROOF		
BURST		
REVERSE CRACKING		
OPERATING TEMPERATURE RANGE	$-12 \text{ to } {}^{60}\text{C}$ $(\pm 10 \text{ to } {}^{140}\text{F})$	
LEAKAGE -	오늘 입사 하는 그 아이를 보면 없었다. 눈물 이 하지 않는 것을 먹었다.	
	scc/hr OF @ N/cm² ( PSIA)	
	scc/s OF @N/cm <sup>2</sup> (PSIA)	
SUPPLY VOLTAGE RANGE	그 뒤집다는 사람들이 나는 그는 이 얼마는 바다 하는 사람들이 되는 사람들이 나타가 되는 것이 없는데 모든 것이다.	
POWER	WATTS MAX @Vdc,OC (OF)	
MAXIMUM CONTINUOUS VOLTAGE WITHOUT PROPELLANT FLOW		
DIELECTRIC STRENGTH	MA MAX. CURRENT LEAKAGE @VOLTS rms, Hz	
INSULATION RESISTANCE	MΩ @Vdc	
MAXIMUM VALVE MAGNETIC FIELD DENSITY -	는 이 등에 되는 이 이 등을 하고 하는 것이 되었다. 그 사람들은 사람들은 사람들이 되었다. 그 그렇다. 그 것이 말한 사람들은 사람들은 사람들은 사람들이 가장 살았다. 그 사람들은 사람들은 사람들은 보다는 것이다.	
	nT @ I m ( GAMMA @ 6 in)	
DE-ENERGIZED	nT @ I m ( GAMMA @ 6 in)	
MATERIAL	본어로 그는 소개에 오늘 등 고급통으로 가능한 일을 하여 있었는데 하셨다.	
CONSTRUCTION		
SEATS		

CONNECTION -	
INLET	
OUTLET	
ELECTRICAL	
LAUNCH ENVIRONMENT - RANDOM VIBRATION -	
WIDE BAND LEVEL	G <sub>rms</sub>
MAX POWER SPECTRAL DENSITY	G <sup>2</sup> /Hz from to Hz
SINUSOIDAL VIBRATION -	
SWEEP RATE	OCTAVES/min
MAX G LEVEL (O-PEAK)	ATHz
	ATHz
	AT Hz
ACOUSTIC VIBRATION -	
OVERALL SOUND PRESSURE LEVEL	dB FOR MINUTES
SHOCK RESPONSE -	
WAVE FORM PEAK-LEVEL OF	G's FORsec
SHOCK SPECTRUM-PEAK RESPONSE OF	G's AT HZ
AMPLIFICATION FACTOR (Q)	
STATIC ACCELERATION	
MASS	kg (1bm)
OTHER SIGNIFICANT CHARACTERISTICS	

MANUFACTURER Valcor Engineering Corp. (33)

PART NUMBER <u>V27200-454</u>

CONTRACTING AGENCY	France
PRIME CONTRACTOR	ADAR Engineering Corp.; Paris, France
STATUS	Yes
QUALIFIED  FLOWN  LAUNCH VEHICLE	
AVAILABILITY	Pre engineered hardware made to customer order
COST/PROCUREMENT INFORMATION	Specific quotation can be offered firm within 2 weeks of the inquiry.
	within 2 weeks of the inquiry.

COMSAT

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TYPE DESIGN FLOW MEDIA	
	.00350 kg/sec @ 50 N/cm², 21 °c
	(.00772 lbm/sec e73PSID,70°F)
RESPONSE - OPEN	25 ms @ 27 Vdc, 256 N/cm2 INLET PRESSURE, 21 °C
CLOSE	(372 PSIA INLET PRESSURE, 70 °F 25 ms @ 27 Vdc, 256 N/cm <sup>2</sup> , 21 °C (372 PSIA, 70 °F)
LATCHING MECHANISM - TYPE	
MINIMUM ELECTRICAL PULSE WIDTH -	
TO OPEN	50 ms @ 27 Vdc (MAXIMUM)
TO CLOSE	
OPEN/CLOSED POSITION INDICATION SWITCH	No
INTEGRAL FILTER	25 MICRONS ABSOLUTE
LIFE 2	
PRESSURES -	
OPERATING	2506 N/cm <sup>2</sup> ( <u>3635</u> PSIA)
PROOF	
BURST	$5009 \text{ N/cm}^2$ ( $7265 \text{ PSIA}$ )
REVERSE CRACKING	N/A N/cm <sup>2</sup> ( PSIA)
OPERATING TEMPERATURE RANGE	$-20 \text{ to}^{+65}$ °°° (-4 to+150 °F)
LEAKAGE -	CN
INTERNAL	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
SUPPLY VOLTAGE RANGE	25-27 Vdc
POWER	30 WATTS MAX @ 27.2 Vdc, 20 °C ( 68 °F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT PROPELLANT FLOW	N/A Vdc
DIELECTRIC STRENGTH	MAX. CURRENT LEAKAGE VOLTS rms, Hz
INSULATION RESISTANCE	100 MΩ @ 500 Vdc
MAXIMUM VALVE MAGNETIC FIELD DENSITY - ENERGIZED	nT @   m ( GAMMA @ 6 in)
DE-ENERGIZED	nT @ I m (GAMMA @ 6 in)
MATERIAL -	고면 현대 이 시 아이는 사고는 이 사고를 보면 했다. 그리고 바로 바로 하다
CONSTRUCTION	
SEATS	Polyimide/ST/ST
39	4.2.3-26

4.2.3 VALVE, PROPELLANT ISOLATION continued

P/N V27200-454

CONNECTION -	22656			
INLET	33656-			
OUTLET				
ELECTRICAL	PTIH-8	3-4p		
LAUNCH ENVIRONMENT - RANDOM VIBRATION -				
WIDE BAND LEVEL		- G <sub>rms</sub>		
MAX POWER SPECTRAL DENSITY			om to _	Hz
SINUSCIDAL VIBRATION -				
SWEEP RATE		OCTAVES/n	nin	
MAX G LEVEL (O-PEAK)		AT	Hz::	
		AT	Hz	
		AT	Hz	
COUSTIC VIBRATION -				
OVERALL SOUND PRESSURE LEVEL		dB FOR	MINUTE	<b>S</b> .
HOCK RESPONSE -	W. 1 - Marin	ering of the second of the sec		
WAVE FORM PEAK-LEVEL OF		G's FOR _	sec	
SHOCK SPECTRUM-PEAK RESPONSE OF		G's AT	Hz	
AMPLIFICATION FACTOR (Q)				
TATIC ACCELERATION				
IASS			0.43	_Ibm) actual
1100	0.19	La .	7 0.73	Ihm) actual

MANUFACTURER _	Valcor Engineer	cing (33)
PART NUMBER	V27200-513	
PROGRAM		ELMS Program
CONTRACTING AG	ENCY	USAF
PRIME CONTRACTO	)R	Grumman
STATUS QUALIFIED		Yes, completed 8/30/74
요리 그 살았다. 일류 하기 열리 하는 것인	DLE	
AVAILABILITY		
COST/PROCUREMEN	T INFORMATION	
EDING PAGE BLA	ANK NOT FILMED	

TYPE	GN <sub>2</sub>
DESIGN FLOW MEDIA	
RATED FLOW AT PRESSURE DIFFERENTIAL	kg/sec @N/cm <sup>2</sup> ,°c
.051 ESEO (CD = .65)	(Ibm/sec @PSID,OF)
RESPONSE -	
OPEN	$\frac{25}{\text{ms}}$ ms $\frac{24}{\text{vdc}_{\parallel}}$ $\frac{2413}{\text{N/cm}^2}$ INLET PRESSURE,°C
	(3500PSIA INLET PRESSURE, °F)
CLOSE	25 ms @ 32 Vdc, 2413N/cm²,°c
	( <u>350</u> 0PS1A,°F)
LATCHING MECHANISM - TYPE	Magnetic-dual coil
MINIMUM ELECTRICAL PULSE WIDTH -	100 24
	100 ms @ 24 vdc (MAXIMUM)
TO CLOSE	100_ ms @24 Vdc (MAXIMUM)
PEN/CLOSED POSITION INDICATION SWITCH	N/A Available on module version & adaptable this design
INTEGRAL FILTER	MICRONS ABSOLUTE
.IFE	$1 \times 10^{\circ}$ CYCLES
RESSURES -	
OPERATING	$\frac{2413}{\text{N/cm}^2} \qquad (\frac{3500}{\text{PSIA}})$
PROOF	$\underline{3620}_{\text{N/cm}^2} \text{N/cm}^2 \qquad (\underline{5250}_{\text{PSIA}})$
BURST	$\frac{4826}{\text{N/cm}^2} \text{ N/cm}^2 \qquad (\underline{7000} \text{ PSIA})$
REVERSE CRACKING	$\frac{N/A}{65.5} \frac{N/cm^2}{65.5} = \frac{150}{150} $
PERATING TEMPERATURE RANGE	$\frac{-34 \text{ to}}{6}$ % ( $\frac{-30 \text{ to}}{6}$ )
EAKAGE -	
INTERNAL 3	$\frac{3.08 \times 10^{-8} \text{scc/hr of}}{\text{x } 10^{-6} \text{scc/s}} = \frac{\text{GN}_2}{\text{N/cm}^2} = \frac{150^{-24} \text{N/cm}^2}{\text{N/cm}^2} = \frac{3500}{\text{PSIA}}$
EXTERNAL1	$\times 10^{-6}$ scc/s OF He $\approx 2413$ N/cm <sup>2</sup> (3500 PSIA)
UPPLY VOLTAGE RANGE	24-32 Vdc
	42 WATTS MAX @ 32 Vdc, 21 °C ( 70 °F)
AXIMUM CONTINUOUS VOLTAGE WITHOUT	
ROPELLANT FLOW	32vdc
Francisco de la companya de la comp	
SULATION RESISTANCE	γdc
XIMUM VALVE MAGNETIC FIELD DENSITY -	
ENERGIZED	
DE-ENERGIZED	nT @ I m ( GAMMA @ 6 in)
ATERIAL -	성상으로 가는 사람들은 물레 그런 얼굴없는 나무에 달라.
CONSTRUCTION	ST/ST Welded
SEATS	ST/ST

CONNECTION -	P/N V27200-513
INLET	MS 33656G6MOD
OUTLET	MS33656G6MOD PT1H-8-3P
LAUNCH ENVIRONMENT - RANDOM VIBRATION -	
WIDE BAND LEVEL	V 1
MAX POWER SPECTRAL DENSITY	G <sup>2</sup> /Hz from to Hz
SINUSOIDAL VIBRATION -	
SWEEP RATE	OCTAVES/min
MAX G LEVEL (O-PEAK)	ATHz
	ATHz
	ATHz
ACOUSTIC VIBRATION -	전문화 프로마스 프로마스 네트를 보고 있다.
OVERALL SOUND PRESSURE LEVEL	dB FOR MINUTES
SHOCK RESPONSE -	
WAVE FORM PEAK-LEVEL OF	G's FORsec
SHOCK SPECTRUM-PEAK RESPONSE OF	
STATIC ACCELERATION	
MASS	kg (0.6lbm)
OTHER SIGNIFICANT CHARACTERISTICS	는 사람들이 되었다. 그런 사람들이 되었다. 그런 그런 그런 그런 함께 하는 것이다. 그런 사람들이 되었다. 그는 사람들이 가지를 하는 것이다. 그런 그런 그런 그런 것이다.

Integral filter, position indication available as option

MANUFACTURER	Moog, Inc. (35,54)	
		5,84 - 1.64 ->
PART NUMBER	50-436	
		2.18

PROGRAM	Earth Atmosphere Explorer (Orbit Adjust Propulsion System)
CONTRACTING AGENCY	NASA/GSFC
PRIME CONTRACTOR	RCA (TRW)
STATUS	
QUALIFIED	Yes - Yes
LAUNCH VEHICLE	Thor Delta
AVAILABILITY	그는 마이트 그들은 그들은 그들은 그 그들은 말을 하는데 되었다.
COST/PROCUREMENT INFORMATION	
	마르크를 보고 보고 하다면 한다고 있다고 있으고 있는 그는 그들을 하는 것이라면 하는데 없다. 1800년 1일

#### 4.2.3 VALVE, PROPELLANT ISOLATION

	en e
TYPE DESIGN FLOW MEDIA	Solenoid operated, single seat, single coil N2H4
	0.009 kg/sec a 8.2 N/cm <sup>2</sup> °c
RATED FLOW AT PRESSURE DIFFERENTIAL	
	( <u>Q.Q2</u> lbm/sec e <u>1.2</u> PSID,OF)
RESPONSE -	
OPEN	10 ms @ 26 Vdc, 413 N/cm2 INLET PRESSURE, 50 °C
and the second of the second o	30 ms @ $\frac{35.5}{\sqrt{500}}$ Vdc, $\frac{34}{\sqrt{500}}$ N/cm <sup>2</sup> , $\frac{5}{\sqrt{500}}$ °C
CLOSE	ms @ $\frac{33.5}{1.0}$ Vdc, $\frac{34}{1.0}$ N/cm <sup>2</sup> , $\frac{5}{1.0}$ °C
	(50  PSIA, 41  of)
LATCHING MECHANISM - TYPE	N/A
MINIMUM ELECTRICAL PULSE WIDTH -	
	ms @ Vdc (MAXIMUM)
TO CLOSE	ms @ Vdc (MAXIMUM)
	None
OPEN/CLOSED POSITION INDICATION SWITCH	None
INTEGRAL FILTER	MOTE MICRONS ABSOLUTE
LIFE	10,000 CYCLES
PRESSURES -	
OPERATING	$\frac{424 \text{ N/cm}^2}{\text{C}} \qquad (\underline{615} \text{ PSIA})$
PRO0F	
BURST	837 N/cm <sup>2</sup> ( 1215 PSIA)
REVERSE CRACKING	N/cm <sup>2</sup> (PSIA)
	+5.0 to +50.0 (+41to+122 o <sub>F</sub> )
OPERATING TEMPERATURE RANGE	(141co 1122 +)
LEAKAGE -	No. 50 507 05 765
INTERNAL	$\frac{1}{1 \times 10^{-7}} \frac{\text{scc/hr of}}{\text{scc/s of}} \frac{\text{N}_2}{\text{Me}} = \frac{58-527  \text{N/cm}^2}{527  \text{N/cm}^2} \left( \frac{85-765  \text{PSIA}}{765  \text{PSIA}} \right)$
EXTERNAL	$1 \times 10$ scc/s OF He $_{\odot}$ 527 N/cm <sup>2</sup> ( 765 PSIA)
SUPPLY VOLTAGE RANGE	22-36 Vdc
POWER	25 WATTS MAX @ 32.5 Vdc, 20 °C ( 68 °F)
PROPELLANT FLOW	7_35.5 <sub>Vdc</sub>
	그런 어떻게 하는 사람들은 사람들이 가장 하는 사람들이 가는 것이 되었다. 그는 사람들이 얼마를 살았다.
DIELECTRIC STRENGTH	1 ma MAX. CURRENT LEAKAGE • 500 VOLTS rms, 60 Hz
INSULATION RESISTANCE	
MAXIMUM VALVE MAGNETIC FIELD DENSITY -	그리 본 한국의 아이지의 전문 때문 등이 가지 않는 것들이 말했다.
ENERGIZED	
DE-ENERGIZED	nT @ I m ( GAMMA @ 6 in)
MATERIAL -	
CONSTRUCTION	Cres. Teflon seal
SEATS	Single Teflon fixed to body
SEMIS AND	

### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.3 VALVE, PROPELLANT ISOLATION continued P/N 50-436

CONNECTION -				
INLET	Braze fitting			
OUTLET	Braze fitting "Pigtail" leads			
ELECTRICAL	"Pigtail" leads			
RANDOM VIBRATION -				
WIDE BAND LEVEL	G <sub>rms</sub>			
MAX POWER SPECTRAL DENSITY	G <sup>2</sup> /Hz from	to _	Hz	
SINUSCIDAL VIBRATION -				
SWEEP RATE	OCTAVES/min			
MAX G LEVEL (O-PEAK)	AT Hz			
	AT Hz			
	AT Hz			
ACOUSTIC VIBRATION -				
OVERALL SOUND PRESSURE LEVEL	dB FOR	_ MINUTES		
SHOCK RESPONSE -				
WAVE FORM PEAK-LEVEL OF	G's FOR	sec		
SHOCK SPECTRUM-PEAK RESPONSE OF	G's AT	Hz		
AMPLIFICATION FACTOR (Q)				
STATIC ACCELERATION	G's			
MASS	0.1	0.4		
MASS	Kg (		_ ( DM )	
OTHER SIGNIFICANT CHARACTERISTICS				
All wolded construction				

MANUFACTURER Pyronetics

CONTRACTING AGENCY.....

PART NUMBER	(TRW P/N EQ13-50	PRE PS S. PS
PROGRAM		Atmosphere Explorer

(54)

NASA/GSFC



#### 4.2.3 VALVE, PROPELLANT ISOLATION

TYPE	Normally open squib operated
DESIGN FLOW MEDIA	Hydrazine
RATED FLOW AT PRESSURE DIFFERENTIAL	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
	20 ms @ 28 Vdc,413 N/cm <sup>2</sup> INLET PRESSURE, 21 °C (600 PSIA INLET PRESSURE, 70 °F)
CLOSE	N/A ms @Vdc,N/cm <sup>2</sup> ,°C (PSIA,°F)
LATCHING MECHANISM - TYPE	
MINIMUM ELECTRICAL PULSE WIDTH - TO OPEN TO CLOSE	N/A ms @ Vdc (MAXIMUM) ms @ Vdc (MAXIMUM)
OPEN/CLOSED POSITION INDICATION SWITCH	None
INTEGRAL FILTER	None MICRONS ABSOLUTE
LIFE	1 CYCLES
PRESSURES - OPERATING PROOF	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
BURST	$1654 \text{ N/cm}^2 \qquad (2400 \text{ PSIA})$
REVERSE CRACKING	N/cm <sup>2</sup> (N/A PSIA)
OPERATING TEMPERATURE RANGE	_ <u>5-50</u> °c ( <u>41-122</u> ° <sub>F</sub> )
LEAKAGE - INTERNAL	$\frac{1 \times 10^{-7} \text{scc/h} \text{ of } \frac{\text{He}}{1 \times 10^{-7} \text{scc/s}} \text{ of } \frac{\text{He}}{\text{He}} = \frac{413}{413} \frac{\text{N/cm}^2}{\text{N/cm}^2} \left( \frac{600}{600} \frac{\text{PSIA}}{\text{PSIA}} \right)$
SUPPLY VOLTAGE RANGE	
POWER	126 WATTS MAX @ 28 Vdc, 21 °C (70 °F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT PROPELLANT FLOW	
DIELECTRIC STRENGTH	N/A MAX. CURRENT LEAKAGE W VOLTS rms, Hz
INSULATION RESISTANCE	N/A MΩ · Vdc
MAXIMUM VALVE MAGNETIC FIELD DENSITY - ENERGIZED DE-ENERGIZED	_N/A nT @ I m ( GAMMA @ 6 in) _N/A nT @ I m ( GAMMA @ 6 in)
MATERIAL - CONSTRUCTION	Stainless Steel all welded N/A
	하고 어린 내가 내가 어떤 뒤에 어떤 경험에 되는 사람이 되어 있었다. 하늘 생각이 되는 사람이 되는 사람이 하는 것이다.

### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.3 VALVE, PROPELLANT ISOLATION continued P/N TRW EQ13-50

INLET	1/4" Stainless Tu	be w/braze fitting
1 to proper it		be w/braze fitting
	4 pin bayonet com	
LAUNCH ENVIRONMENT - RANDOM VIBRATION -		
WIDE BAND LEVEL	G <sub>rms</sub>	
MAX POWER SPECTRAL DENSITY	G <sup>2</sup> /Hz from	to Hz
SINUSOIDAL VIBRATION -		
SWEEP RATE	OCTAVES/min	
MAX G LEVEL (O-PEAK)	AT Hz	
	AT Hz	
	ATHz	
ACOUSTIC VIBRATION -		
OVERALL SOUND PRESSURE LEVEL	dB FOR	MINUTES
SHOCK RESPONSE -		
WAVE FORM PEAK-LEVEL OF	G's FOR	. <b>sec</b>
SHOCK SPECTRUM-PEAK RESPONSE OF	G's AT	(Nz ) Property of the control of the
AMPLIFICATION FACTOR (Q)		
STATIC ACCELERATION		
MASS	<u>.15</u> kg (	<u>. 34</u> 1bm)
OTHER SIGNIFICANT CHARACTERISTICS		

MANUFACTURER Valcor Engineering Corp. (33)

PART NUMBER <u>V27200-339</u>

PROGRAM	Aerobee
CONTRACTING AGENCY	NASA/Goddard
PRIME CONTRACTOR	NASA/Goddard
STATUS	
QUALIFIED	Yes
FLOWN	Yes
AVAILABILITY	Pre engineered hardware made to customer order.
COST/PROCUREMENT INFORMATION	Specific quotation can be offered firm
	within 2 weeks of inquiry.
보는 "이 이 이 보고 있는 것을 하고 있다"는 "이 이 사람들이 되었다"는 "이 이 기를 받는 것이다. 	하는 그 그 여행 시골도라면 동안하다 보는 분이를 보고 있는 것이다. 그런 반호를 받아 그

#### 4.2.3 VALVE, PROPELLANT ISOLATION

TYPE	Pulse valve
DESIGN FLOW MEDIA	GHe
RATED FLOW AT PRESSURE DIFFERENTIAL	kg/sec @ N/cm <sup>2</sup> ,oc
······································	(lbm/sec @PSID,OF)
	10101
RESPONSE -	8 ms e 24 Vdc, 458 N/cm2 INLET PRESSURE, 21
UPEN	( 665 PSIA INLET PRESSURE, 70
CLOSE	4 ms @ ydc, 458 N/cm <sup>2</sup> , 21 °C
<b>02002</b>	( <u>665</u> PSIA, <u>70</u> °F)
LATCHING MECHANISM - TYPE	
MINIMUM ELECTRICAL PULSE WIDTH -	
TO OPEN	N/A ms @ Vdc (MAXIMUM)
	N/A ms @ Vdc (MAXIMUM)
OPEN/CLOSED POSITION INDICATION SWITCH	
INTEGRAL FILTER	N/A MICRONS ABSOLUTE
LIFE	
PRESSURES - OPERATING	458 N/cm <sup>2</sup> ( <u>665</u> PSIA)
PROOF	
BURST	
REVERSE CRACKING	N/cm <sup>2</sup> (PSIA)
OPERATING TEMPERATURE RANGE	
.EAKAGE -	6 scc/hr OF He @ 458 N/cm <sup>2</sup> ( 665 PSIA)
	0 scc/s OF He @ 458 N/cm <sup>2</sup> ( 665 PSIA)
	24-32 Vdc
SUPPLY VOLTAGE RANGE	
OWER	24 WATTS MAX @ 30 Vdc, 21 °C ( 70 °F
ROPELLANT FLOW	32 Vdc
IELECTRIC STRENGTH	MA MAX. CURRENT LEAKAGE VOLTS rms, H
NSULATION RESISTANCE	_100 MΩ @500 Vdc
AXIMUM VALVE MAGNETIC FIELD DENSITY - ENERGIZED	
DE-ENERGIZED	nT @ I m ( GAMMA @ 6 in)
ATERIAL -	ST/ST
CONSTRUCTION	303/BUNA N
SEATS	4.2.3-42

4.2.3 VALVE, PROPELLANT ISOLATION continued P/N V27200-339

CONNECTION -	
INLET	Plug in
OUTLET	
ELECTRICAL	
LAUNCH ENVIRONMENT - RANDOM VIBRATION -	
WIDE BAND LEVEL	G <sub>rms</sub>
MAX POWER SPECTRAL DENSITY	G <sup>2</sup> /Hz from to Hz
SINUSCIDAL VIBRATION -	
SWEEP RATE	OCTAVES/min
MAX G LEVEL (O-PEAK)	AT Hz
	AT Hz
	AT Hz
ACOUSTIC VIBRATION -	
OVERALL SOUND PRESSURE LEVEL	dB FOR MINUTES
SHOCK RESPONSE -	
WAVE FORM PEAK-LEVEL OF	G's FORsec
SHOCK SPECTRUM-PEAK RESPONSE OF	G's AT Hz
AMPLIFICATION FACTOR (Q)	
STATIC ACCELERATION	
MASS	0.170 kg (0.375 lbm)
OTHER SIGNIFICANT CHARACTERISTICS	

MANUFACTURER	Circle Seal Co James, Pond, &	rporation Clark Div.		
		(30)		
				and the second second
PART NUMBER	V-4341			
	$\frac{\partial \mathcal{M}_{i}}{\partial x_{i}} = \frac{\partial \mathcal{M}_{i}}{\partial x_{i}} = \frac{\partial \mathcal{M}_{i}}{\partial x_{i}}$			
PROGRAM	• • • • • • • • • • • • • • • •	Space Shutt	1e	
INVUNAMI				
CONTRACTING A	AGENCY			
PRIME CONTRAC	CTOR	Rockwell In	<u>ternational</u>	
STATUS				
QUAL!FIED.				
FLOWN				
LAUNCH VEH	IICLE			
AVAILABILITY.				
			- 64000	
COST/PROCUREM	IENT INFORMATION	1 to 4 unit	s - 34000	
PRECEDE				
PRECEDING PA	GD BLAW NOW NO			

TYPE	Isolation Propellant electrically operated N2 <sup>0</sup> 4, MMH
DESIGN FLOW MEDIA	——————————————————————————————————————
RATED FLOW AT PRESSURE DIFFERENTIAL	$\frac{.045}{(10 \text{ lbm/sec } @ 5.0 \text{ PSID}, -65 \text{ to}^{25})} ( \frac{.10}{} $
	( <u>.10</u> lbm/sec @ <u>5.0</u> PSID, <u>-65 to</u> °F)
RESPONSE -	
OPEN	ms @ Vdc, N/cm <sup>2</sup> INLET PRESSURE,OC
	(PSIA INLET PRESSURE,OF
CLOSE	ms @Vdc,N/cm <sup>2</sup> ,°C
	(PSIA,°F)
LATCHING MECHANISM - TYPE	
MINIMUM ELECTRICAL PULSE WIDTH -	
	ms @ Vdc (MAXIMUM)
TO CLOSE	ms @ Vdc (MAXIMUM)
OPEN/CLOSED POSITION INDICATION SWITCH	
INTEGRAL FILTER	MICRONS ABSOLUTE
LIFE	
PRESSURES -	
OPERATING	$0-210 \text{ N/cm}^2$ ( $0-305 \text{ PSIA}$ )
PROOF	
BURST	
REVERSE CRACKING	
OPERATING TEMPERATURE RANGE	
LEAKAGE -	N/cm² ( PSIA)
EVTEDNAL	
SUPPLY VOLTAGE RANGE	
POWER	WATTS MAX @Vdc,°C (°F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT	
PROPELLANT FLOW	
DIELECTRIC STRENGTH	
INSULATION RESISTANCE	MΩ @ Vdc
MAXIMUM VALVE MAGNETIC FIELD DENSITY -	하는 것 같아. 이 전에 가장 보고 있다고 하는 것이 되었다. 그는 바로 그는 것이 되었다. - 이 사람들은 사람들은 사람들은 기를 보고 있다. 그는 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은
	nT @ I m ( GAMMA @ 6 in)
DE-ENERGIZED	nT @ I m ( GAMMA @ 6 in)
ATERIAL -	요즘 하는 사람들이 되었다. 이번 사람들이 들어 들어 가는 사람들이 들어 들었다. 그들은 사람들이 되었다.
CONSTRUCTION	Cres
SEATS	Teflon Cres

CONNECTION -			
INLET			
OUTLET			
ELECTRICAL		<del></del>	<del></del>
A AMARI ENVIDANMENT			
LAUNCH ENVIRONMENT - Random Vibration -			
WIDE BAND LEVEL	G		
MAX POWER SPECTRAL DENSITY	G <sup>2</sup> /Hz from	to	Hz
SINUSCIDAL VIBRATION -			
SWEEP RATE	OCTAVES/min		
MAX G LEVEL (O-PEAK)			
	AT		
	AT		
ACOUSTIC VIBRATION -			
OVERALL SOUND PRESSURE LEVEL	dB FOR	MINUTES	a isi wante wila. Najirana katao z
SHOCK RESPONSE -			
WAVE FORM PEAK-LEVEL OF	G's FOR	sec	
SHOCK SPECTRUM-PEAK RESPONSE OF	G's AT	Hz	
AMPLIFICATION FACTOR (Q)			
STATIC ACCELERATION			
MASS	2	6	
MASS	kg (	U	bm)
OTHER SIGNIFICANT CHARACTERISTICS			

(33)

Valcor Engineering

MANUFACTURER

	PART NUMBER	V27200-195	
)	PROGRAM		Classified Re-entry vehicles
	CONTRACTING A	GENCY	USAF
	PRIME CONTRACT	TOR	TRW Systems
	STATUS QUALIFIED.		Yes, by TRW
			_YesUnknown
	AVAILABILITY.		
	COST/PROCUREMI	ENT INFORMATION	
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			B.A.B.B.B. 1980 - 1980 - 1981 - 1981 - 1981 - 1981 - 1981 - 1981 - 1981 - 1981 - 1981 - 1981 - 1981 - 1981 - 1

4.2.3-49

#### 4.2.3 VALVE, PROPELLANT ISOLATION

TYPE	2 way N/C
DESIGN FLOW MEDIA	$N_{2}O_{4}, N_{2}H_{4}$
	kg/sec #N/cm <sup>2</sup> ,°C
20 in ESEO (CD = .65)	kg/sec @ N/cm <sup>-</sup> , ° C ( 1bm/sec @ PSID, ° F)
	( IDM/Sec @ F310, F)
RESPONSE -	10 28 202 2 21
OPEN	
a or occ	10 ms @ Vdc, 203 N/cm <sup>2</sup> ,21 °C
CLUSE	(295 PSIA, 70 °F)
LATCHING MECHANISM - TYPE	-N/A
MINIMUM ELECTRICAL PULSE WIDTH -	ms @ Vdc (MAXIMUM)
	ms @ Vdc (MAXIMUM)
OPEN/CLOSED POSITION INDICATION SWITCH	$\frac{N/A}{1 \times 10^5}$ microns absolute
INTEGRAL FILTER	
LIFE	20,000 CYCLES
PRESSURES -	
OPERATING	$\frac{203 \text{ N/cm}^2}{\text{Com}^2} \qquad (\frac{295}{\text{PSIA}})$
PROOF	
BURST	$\frac{630 \text{ N/cm}^2}{\text{(} 915 \text{ PSIA)}}$
REVERSE CRACKING	
OPERATING TEMPERATURE RANGE	-28  to  73.8 ( $-20  to  +165$
LEAKAGE -	
INTERNAL	015 $\frac{N_2^{H_4}}{10000000000000000000000000000000000$
EXTERNAL	0 scc/s 0F @ N/cm² ( PSIA)
SUPPLY VOLTAGE RANGE	
POWER	56 WATTS MAX @ 28 Vdc, 21 °C ( 70 °F)
AXIMUM CONTINUOUS VOLTAGE WITHOUT	Ndo na e e e e e e e e e e e e e e e e e e
	그 사는 사람이 있는 그의 그 사람들은 가장 하는 것들이 있는 생각하는 경우를 가고 함께 함께 보냈다. 그래 우리
	MA MAX. CURRENT LEAKAGE & VOLTS rms, Ha
NSULATION RESISTANCE	$50 \text{ M}\Omega$ $_{\odot}$ :500 Vdc
AXIMUM VALVE MAGNETIC FIELD DENSITY -	
ENERGIZED	nT @ I m ( GAMMA @ 6 in)
DE-ENERGIZED	nT@!m (GAMMA@6 in)
ATERIAL -	
CONSTRUCTION	ST/ST - Teflon
	DI/SI - Terion

### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.3 VALVE, PROPELLANT ISOLATION continued P/N V27200-195

CONNECTION -	Flared .0064 m (.25 in)
	Plug 3/4-20
<b>401.22</b> 1	P1T
LAUNCH ENVIRONMENT - RANDOM VIBRATION -	
WIDE BAND LEVEL	G <sub>rms</sub>
MAX POWER SPECTRAL DENSITY	G <sup>2</sup> /Hz from to Hz
SINUSCIDAL VIBRATION -	
SWEEP RATE	OCTAVES/min
MAX G LEVEL (O-PEAK)	ATHz
그렇게 아이들 하는 그들은 생각이 될	AT Hz
	AT Hz
ACOUSTIC VIBRATION -	
OVERALL SOUND PRESSURE LEVEL	dB FOR MINUTES
SHOCK RESPONSE -	
WAVE FORM PEAK-LEVEL OF	
SHOCK SPECTRUM-PEAK RESPONSE OF	
AMPLIFICATION FACTOR (Q)	
STATIC ACCELERATION	G's
MASS	0.2 kg ( 0.5 lbm)
OTHER SIGNIFICANT CHARACTERISTICS	

ATTITUDE	CONTROL	<b>PROPULSION</b>	COMPONENT	DATA	SHEET
4.2.3 VALVE	, PROPELLANT	ISOLATION			

MANUFACTURER	Valcor Engineering Corp	<u>. (33</u> )

PART NUMBER <u>V27200-411</u>

PROGRAM	Classified
CONTRACTING AGENCY	Air Force
PRIME CONTRACTOR	Hamilton Standard
STATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE	Yes
AVAILABILITY	Pre engineered hardware made to customer order
COST/PROCUREMENT INFORMATION	Specific quotation can be offered firm within 2 weeks of inquiry.
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4.2.3 VALVE, PROPELLANT ISOLATION

	.019 in (.75 in) N.C. Sol. N <sub>2</sub> H <sub>4</sub>
DESIGN FLOW MEDIA	
RATED FLOW AT PRESSURE DIFFERENTIAL	O50_kg/sec eN/cm <sup>2</sup> ,oc
	(
RESPONSE -	
OPEN	15 ms @ 24 Vdc, 386 N/cm2 INLET PRESSURE, 21 °C
	( 561 PSIA INLET PRESSURE. 70 °I
CLOSE	15 ms @Vdc, 275 N/cm <sup>2</sup> , 21 °c
	( <u>400</u> PSIA, <u>70</u> °F)
LATCHING MECHANISM - TYPE	N/A
MINIMUM ELECTRICAL PULSE WIDTH -	
TO OPEN	ms @ Vdc (MAXIMUM)
TO CLOSE	ms @ Vdc (MAXIMUM)
OPEN/CLOSED POSITION INDICATION SWITCH	N/A
INTEGRAL FILTER	N/A MICRONS ABSOLUTE
LIFE	
PRESSURES - OPERATING	397 2
PROOF	
REVERSE CRACKING	
OPERATING TEMPERATURE RANGE4	$.4 \pm 071.1 \circ_{C} \circ_{F}$
LEAKAGE -	No. 34 386 0
INTERNAL	$\frac{20}{5\times10^{-6}} \frac{\text{scc/hr OF}}{\text{scc/s OF}} \frac{\text{N}_2}{\text{He}} = \frac{34-\frac{386}{\text{N/cm}^2}}{386} \frac{\text{N/cm}^2}{\text{N/cm}^2} (\frac{50-561}{561} \text{PSIA})$
EXTERNAL	
SUPPLY VOLTAGE RANGE	24-36 vdc
POWER	38 WATTS MAX @ 30 Vdc, 21 °C ( 70 °F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT	용일 높이 하고 있는 경험이 보이는 회의로 바로 함께 가면 없다.
PROPELLANT FLOW	N/A vdc
DIELECTRIC STRENGTH	MAX. CURRENT LEAKAGE @ VOLTS rms, Hz
INSULATION RESISTANCE	
MAXIMUM VALVE MAGNETIC FIELD DENSITY -	- 배병 등 마음은 독교 하는 등 중요 등 등 등 등 등 등 등 등 등 등 등 등 등 등 등 등 등
	nT @ t m ( GAMMA @ 6 in)
DE-ENERGIZED	nT @ I m ( GAMMA @ 6 in)
anterial - The second of the s	요즘 보이는 것은 사람들이 하면 기를 가는 것을 하는데 모양하다.
CONSTRUCTION	304 ST/ST - Teflon
SEATS	이 전에는 이 아들의 위에는 이 이 전 나는 이 물로를 들는 나는 데이를 모르겠다. 네 이 전에 제를 받았다는

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.3 VALVE, PROPELLANT ISOLATION continued P/N V27200-411

CONNECTION -	Special face seal
INLET	
•••	Special face seal
ELECTRICAL	P/T
LAUNCH ENVIRONMENT - RANDOM VIBRATION -	
WIDE BAND LEVEL	G <sub>rms</sub>
MAX POWER SPECTRAL DENSITY	G <sup>2</sup> /Hz from to Hz
SINUSOIDAL VIBRATION -	
SWEEP RATE	OCTAVES/min
MAX G LEVEL (O-PEAK)	AT Hz
	ATHz
	ATHz
ACOUSTIC VIBRATION -	
OVERALL SOUND PRESSURE LEVEL	dB FOR MINUTES
SHOCK RESPONSE -	
WAVE FORM PEAK-LEVEL OF	G's FORsec
SHOCK SPECTRUM-PEAK RESPONSE OF	G's AT Hz
AMPLIFICATION FACTOR (Q)	
STATIC ACCELERATION	
MASS	0.2 kg ( 0.6 1bm)
OTHER SIGNIFICANT CHARACTERISTICS	

MANUFACTURER	Marotta Scientifi	ic Controls		
		(53)		
MODEL NO.	MV17DB			
PART NUMBER _	280096			
)				
PROGRAM				
00070407100 40	NENOV.			
CONTRACTING AC	BENCY			
PRIME CONTRACT	OR	Northrop, Aei	rojet, Boeing,	GD/CA
STATUS				
OUALIFIED		Yes		
	CLE			
AND THE CHOICE TEN				
AVAILABILITY				
COST/PROCUREME	NT INFORMATION			
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4.2.3	VALVE.	PROPELLANT	ISOLATION
	,		

TYPE	N.C. 2 way, 2 pos00952m (.375 in) T.S.
DESIGN FLOW MEDIA	Air, N <sub>2</sub>
RATED FLOW AT PRESSURE DIFFERENTIAL	
Equiv. orifice dia150	(PSID,OF)
RESPONSE - $Cd = .6$	2
OPEN	ms @ Vdc, H/cm <sup>2</sup> INLET PRESSURE, O
	(PSIA INLET PRESSURE,OF
CLOSE	ms @vac,n/cm-,c (PSIA,°F)
LATCHING MECHANISM - TYPE	
MINIMUM ELECTRICAL PULSE WIDTH -	ms @ Vdc (MAXIMUM)
	ms e Vdc (MAXIMUM)
OPEN/CLOSED POSITION INDICATION SWITCH	
INTEGRAL FILTER	
LIFE	CYCLES .
PRESSURES -	
OPERATING	
PROOF	•
BURST	699.8 N/cm <sup>2</sup> ( 1015 PSIA)
REVERSE CRACKING	$\frac{-53 \text{ to}}{6} \frac{1}{6} 1$
OPERATING TEMPERATURE RANGE	$-53$ to $^{\circ}$ c $^{\circ}$ c $(-65$ to $^{\circ}$ c $^{\circ}$ F)
LEAKAGE -	그는 그들은 그는 그리는 것으로 그리는 글로 함께
	scc/hr OF @ N/cm <sup>2</sup> ( PSIA)
	scc/s , OF@N/cm <sup>2</sup> (PSIA)
SUPPLY VOLTAGE RANGE	110-125 <sub>/dc</sub>
POWER	WATTS MAX @Vdc,OC (OF)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT	
DIELECTRIC STRENGTH	mA MAX. CURRENT LEAKAGE @ VOLTS rms, Hz
NSULATION RESISTANCE	MΩ @Vdc
MAXIMUM VALVE MAGNETIC FIELD DENSITY -	는 보이 되는 보다는 보다는 이러를 하고 있다. 그리고 그렇게 되는 것이 되었다. 그리고 말을 하고 있을까 못했다. 보다 하는 이 사람들은 사람들이 가득하는 것이 하는 것이 되는 이 보는 것이 되는 것이 되었다.
ENERGIZED	그렇게 하는 사람들이 가는 그 하는 사람들이 하지만 하지만 하지만 하는 것이 되는 것이 하는 사람들이 가는 것이 되었다. 그 사람은
DE-ENERGIZED	nT @ I m ( GAMMA w 6 in)
ATERIAL -	300 Com
CONSTRUCTION	KEL-F
SEATS	

P/N 280096

CONNECTION -	
INLET	
OUTLET	
ELECTRICAL	
LAUNCH ENVIRONMENT - RANDOM VIBRATION -	
WIDE BAND LEVEL	G <sub>rms</sub>
MAX POWER SPECTRAL DENSITY	G <sup>2</sup> /Hz from to Hz
SINUSOIDAL VIBRATION -	
SWEEP RATE	OCTAVES/min
MAX G LEVEL (0-PEAK)	
	ATHz
	AT Hz
ACQUSTIC VIBRATION -	
OVERALL SOUND PRESSURE LEVEL	dB FOR MINUTES
SHOCK RESPONSE -	
WAVE FORM PEAK-LEVEL OF	G's FORsec
SHOCK SPECTRUM-PEAK RESPONSE OF	G's AT Hz
AMPLIFICATION FACTOR (Q)	
STATIC ACCELERATION	
MASS	1.2 kg ( 2.7 lbm)
OTHER SIGNIFICANT CHARACTERISTICS	

(33)

MANUFACTURER Valcor Engineering

	PART NUMBER <u>V27200-120 &amp; -1</u>	<u>21</u>
		Nimbus & OAO
	PROGRAM  CONTRACTING AGENCY	NASA NASA
	PRIME CONTRACTOR	General Electric
	STATUS QUALIFIED	by General Electric & Valcor Engineering
	FLOWN	Yes
	LAUNCH VEHICLE	Thor Agena/Atlas Agena
	AVAILABILITY  COST/PROCUREMENT INFORMATION	
Ì		
	DAGE REANK NOT FILME	1986 - H. M. 마른 및 이 문향이 보면 및 전환 함께 본 경험을 보면 [

TYPE	CNI -		
DESIGN FLOW MEDIA	GN <sub>2</sub> or air		
RATED FLOW AT PRESSURE DIFFERENTIAL	kg/sec e	N/cm <sup>2</sup> ,	°c
Capacity .150 ESEO (CD = .6	5) ( lbm/sec e _	PSID,	°F)
RESPONSE -			
OPEN	15ms @23		
			LET PRESSURE, 70 °F
CLOSE	ms @	Vdc, <u>37</u> N/cm <sup>2</sup> , _	21 °C
	en e	( <u>54</u> PSIA,	<u>/U</u> °F)
LATCHING MECHANISM - TYPE	N/A		
MINIMUM ELECTRICAL PULSE WIDTH -			
TO OPEN			
TO CLOSE		Vdc (MAXIMUM)	
OPEN/CLOSED POSITION INDICATION SWITCH			<u> </u>
INTEGRAL FILTER	25 MICRONS AB	SOLUTE Inlet & Ou	ıtlet
LIFE	1 x 10 CYCLES	en e	
PRESSURES -			
OPERATING	N/cm <sup>2</sup>	(52	PSIA)
PROOF	148 N/cm <sup>2</sup>	(215	EPSIA)
BURST	N/cm <sup>2</sup>	(265	PSIA)
REVERSE CRACKING	N/cm <sup>2</sup>		PSIA)
OPERATING TEMPERATURE RANGE	-62 to 48 & C	( <u>-80 t</u>	120 <sub>°F</sub> )
LEAKAGE -			
INTERNAL	5scc/hr 0F	<u>h4</u> @ <u>37</u> N/cm	12 ( 54 PSIA)
EXTERNAL	Oscc/s OF	0 N/cm	12 (PSIA)
SUPPLY VOLTAGE RANGE	16-32 Vdc		
POWER	35 WATTS MAX @	32 <sub>Vdc</sub> ,	21 °c ( 70 °F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT			
PROPELLANT FLOW	32vdc		
DIELECTRIC STRENGTH	mA MAX. CUR	RENT LEAKAGE	_VOLTS rms, Hz
INSULATION RESISTANCE	100 <sub>MΩ @</sub> 50	O <sub>Vdc</sub>	
MAXIMUM VALVE MAGNETIC FIELD DENSITY - ENERGIZED	nT @ l m ( .	GAMMA @ 6	in)
DE-ENERGIZED		GAMMA @ 6	
MATERIAL -			
CONSTRUCTION			
SEATS	ST/ST - Buna N		

4.2.3 VALVE, PROPELLANT ISOLATION continued

P/N V27200-120 & -121

CONNECTION -	
INLET	33414E6
OUTLET	Pad
ELECTRICAL	Solder lugs
LAUNCH ENVIRONMENT - RANDOM VIBRATION -	
WIDE BAND LEVEL	G <sub>rms</sub>
MAX POWER SPECTRAL DENSITY	G <sup>2</sup> /Hz from to Hz
SINUSOIDAL VIBRATION -	
SWEEP RATE	OCTAVES/min
MAX G LEVEL (O-PEAK)	AT Hz
	AT ĥe
	AT Hz
ACOUSTIC VIBRATION -	
OVERALL SOUND PRESSURE LEVEL	dB FOR MINUTES
SHOCK RESPONSE -	
WAVE FORM PEAK-LEVEL OF	G's FORsec
SHOCK SPECTRUM-PEAK RESPONSE OF	G's ATHz
AMPLIFICATION FACTOR (Q)	the state of the s
STATIC ACCELERATION	G's
MASS	kg (1bm)
OTHER SIGNIFICANT CHARACTERISTICS	

MANUFACTURER	Marotta	Scientific Con	(53)
MODEL NO.	MV229A	· · · · · · · · · · · · · · · · · · ·	(33)
PART NUMBER	281022		

PROGRAM	MGO Tank
CONTRACTING AGENCY	U.S. Army
PRIME CONTRACTOR	Chrysler
STATUS	
QUALIFIED	yes
FLOWN	
LAUNCH VEHICLE	
	그만 보는 내전통 이 회사 전환되는 사람은 선생들이 끊지고 없었다.
AVAILABILITY	
COST/PROCUREMENT INFORMATION	
다는 경기 없는 이 경험에 보면 보고 하는 것 같아. 2015년 - 1 - 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2	

4.2.3 VALVE, PROPELLANT ISOLATION

TYPE	Solenoid, 2 X 2, N.C.
DESIGN FLOW MEDIA	Hyd. fluid, MIL-H-6083
RATED FLOW AT PRESSURE DIFFERENTIAL	kg/sec eN/cm <sup>2</sup> ,oc (lbm/sec ePSID,oF)
LATCHING MECHANISM - TYPE  MINIMUM ELECTRICAL PULSE WIDTH -  TO OPEN  TO CLOSE  OPEN/CLOSED POSITION INDICATION SWITCH	ms @Vdc (MAXIMUM)ms @Vdc (MAXIMUM)
INTEGRAL FILTER	MICRONS ABSOLUTE
LIFE	
PRESSURES - OPERATING PROOF BURST REVERSE CRACKING	N/cm <sup>2</sup> (PSIA)N/cm <sup>2</sup> (PSIA)N/cm <sup>2</sup> (PSIA)
OPERATING TEMPERATURE RANGE	$-31 \text{ to } {}^{51.6} \text{ ambient } (\underline{-25 \text{ to } {}^{125} {}^{6}})$
	scc/s OF N/cm <sup>2</sup> (PSIA)
SUPPLY VOLTAGE RANGE	18-30 Vdc
	WATTS MAX @Vdc,OC (OF)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT PROPELLANT FLOW	Vdc
DIELECTRIC STRENGTH	MA MAX. CURRENT LEAKAGE @ VOLTS rms, Hz
INSULATION RESISTANCE	MΩ @ Vdc
	nT @ I m ( GAMMA @ 6 in) nT @ I m ( GAMMA @ 6 in)
MATERIAL - CONSTRUCTION SEATS	AL. ALY. 2024-T4 Nylon

CONNECTION -	C8F24502 (7/8 - 14 UNF - 3B)
OUTLET	Same
ELECTRICAL	
LAUNCH ENVIRONMENT - RANDOM VIBRATION -	
WIDE BAND LEVEL	G <sub>rms</sub>
MAX POWER SPECTRAL DENSITY	G <sup>2</sup> /Hz from to Hz
SINUSCIDAL VIBRATION -	
SWEEP RATE	OCTAVES/min
MAX G LEVEL (0-PEAK)	ATHz
	ATHz
	AT Hz
ACOUSTIC VIBRATION -	
OVERALL SOUND PRESSURE LEVEL	dB FOR MINUTES
SHOCK RESPONSE -	
WAVE FORM PEAK-LEVEL OF	G's FORsec
SHOCK SPECTRUM-PEAK RESPONSE OF	G's ATHz
AMPLIFICATION FACTOR (Q)	
STATIC ACCELERATION	
MASS	<u>.9</u> kg ( <u>2</u> 1bm)
OTHER SIGNIFICANT CHARACTERISTICS	

4.2.3 VALVE	, PROPELLANT TOUCHT		
	at 1 0-1 0-		
MANUELATURED	Circle Seal Cor James, Pond & C	p. lark Div	
MANUFACTURER	James, Tond & O	(30)	
PART NUMBER _	V_/.339		
TANI NUMDEN _	<u> </u>		
PROGRAM		Space Shuttle	
CONTRACTING AC	BENCY		
DDIME CONTRACT	rAD	Rockwell International	
PRIME CONTRACT	IVK	NOCKWELL LINCOLNAGIONAL	
STATUS			
QUALIFIED			
FLOWN			
	CLE		
LAUNCH YEH	VLE		
AVAILABILITY			
COST/PROCUREME	NT INFORMATION	1 to 4 units - \$1500	

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#### 4.2.3 VALVE, PROPELLANT ISOLATION

TYPE	Isolation Propel	lant Vernier	
DESIGN FLOW MEDIA			
RATED FLOW AT PRESSURE DIFFERENTIAL		3 N/cm <sup>2</sup> Oc	
RAIED FLOW AT PRESSURE DIFFERENTIAL		OPSID,°F)	
RESPONSE -	me a	Ide N/cm <sup>2</sup> INLET PRES	SHEE
UFEN		(PSIA INLET PRES	
CLOSE	ms @ V	/dc, N/cm <sup>2</sup> , o	C
		( PSIA,O	
LATCHING MECHANISM - TYPE			
MINIMUM ELECTRICAL PULSE WIDTH -			
TO OPEN	ms @ V	/dc (MAXIMUM)	
TO CLOSE			
OPEN/CLOSED POSITION INDICATION SWITCH			
INTEGRAL FILTER		ITÉ	
LIFE			
	CACLES WITH		
PRESSURES -	0-210 2	. A 20E	
OPERATING		( <u>0-305</u> PS	
PROOF BURST		( <u>445</u> PS ( <u>TBS</u> PS	The second secon
BURST	N/cm <sup>2</sup>		
REVERSE CRACKING	65.5	(	1 <b>A</b> )
OPERATING TEMPERATURE RANGE	-1.1 to °c	( <u>+30 L0</u> °F	<b>)</b>
LEAKAGE -			
INTERNAL	18 scc/hr 0F	@ N/cm <sup>2</sup> (	PSIA)
EXTERNAL	5 x 10 scc/s 0F	N/cm <sup>2</sup> (	PSIA)
SUPPLY VOLTAGE RANGE	Vdc		
POWER	WATTS MAX @	Vdc,oc	(°F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT			
PROPELLANT FLOW			
DIELECTRIC STRENGTH	mA MAX. CURRENT	LEAKAGEVOLTS r	ms,Hz
INSULATION RESISTANCE	MΩ @	Vdc	
AXIMUM VALVE MAGNETIC FIELD DENSITY -			
ENERGIZED	nT@lm(	GAMMA @ 6 in)	
DE-ENERGIZED			
MATERIAL -			
CONSTRUCTION	CRES		
SEATS			

CONNECTION -			
INLET			
QUTLET			
ELECTRICAL			
LAUNCH ENVIRONMENT - RANDOM VIBRATION -			
WIDE BAND LEVEL	G <sub>rms</sub>		
MAX POWER SPECTRAL DENSITY	G <sup>2</sup> /Hz from	to	Hz
SINUSCIDAL VIBRATION -			
SWEEP RATE	OCTAVES/min		
MAX G LEVEL (O-PEAK)	AT Hz		
	AT Hz		
	AT Hz		
ACQUSTIC VIBRATION -			
OVERALL SOUND PRESSURE LEVEL	dB FOR	_ MINUTES	
SHOCK RESPONSE -			
WAVE FORM PEAK-LEVEL OF	G's FOR	_ sec	
SHOCK SPECTRUM-PEAK RESPONSE OF	G's AT	Hz	
AMPLIFICATION FACTOR (Q)			
STATIC ACCELERATION			
		1.5 <b>1</b> .5 miles	
MASS4	kg (	1 bm)	
OTHER SIGNIFICANT CHARACTERISTICS			

MANUFACTURER	Consolidated C	ontrols Corp. (20)
DART NIMBER	3795	
PART NUMBER _		
PROGRAM		P-95
CONTRACTING AC	ENCY	
and the second		Lockheed Missiles & Space Co.
PRIME CONTRACT	OR	Lockneed Missiles & Space Co.
STATUS		
		Yes
		Yes
	CLE	

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COST/PROCUREMENT INFORMATION ...

5 to 10 units - \$8000

TYPE	Solenoid Latching Valve, positive shut-off
DESIGN FLOW MEDIA	N <sub>2</sub> H <sub>4</sub>
RATED FLOW AT PRESSURE DIFFERENTIAL	kg/sec @12 N/cm <sup>2</sup> ,15°c
Includes double cavitating venturi	( <u>.16</u> lbm/sec e <u>18</u> PSID, <u>60</u> °F)
RESPONSE -	50 22 0 250 2
OPEN	$_{\text{ms}} = 22$ $_{\text{vdc}}, 0-\frac{250}{\text{N/cm}^2}$ INLET PRESSURE,°C $_{(0-\frac{36}{4}\text{PSIA})}$ INLET PRESSURE,°F)
	(U- PSIA INLET PRESSURE, F)
CLOSE	50 ms @ 22 Vdc,N/cm <sup>2</sup> ,°c
	(PSIA,OF) Magnetic
LATCHING MECHANISM - TYPE	indirecte
MINIMUM ELECTRICAL PULSE WIDTH -	75
TO OPEN	75 ms @ 22 vdc (MAXIMUM)
TO CLOSE	75 ms @ 22 Vdc (MAXIMUM)
OPEN/CLOSED POSITION INDICATION SWITCH	Yes
INTEGRAL FILTER	200 MICRONS ABSOLUTE
LIFE	5000 CYCLES
PRESSURES -	
OPERATING	$\frac{0-251}{\text{N/cm}^2} \qquad \qquad (\frac{0-365}{\text{PSIA}})$
PROOF	$\frac{424}{\text{N/cm}^2} \qquad (\frac{615}{\text{PSIA}})$
BURST	$\frac{561}{275 \cdot 361} \text{ N/cm}^2 \qquad \left(\frac{815}{100000000000000000000000000000000000$
REVERSE CRACKING	$\frac{275-361}{\text{N/cm}^2}$ $\frac{(400-525)}{(400-525)}$ PSIA)
OPERATING TEMPERATURE RANGE	$+4.4 \pm 060$ °c $(+40 \pm 0 + 140$ °F)
LEAKAGE -	GN
INTERNAL	
EXTERNAL	
SUPPLY VOLTAGE RANGE	22-32 <sub>Vdc</sub>
POWER2	.04 amps MAX @ 30 Vdc, 21 °c ( 70 °F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT	
PROPELLANT FLOW	
DIELECTRIC STRENGTH	
INSULATION RESISTANCE	
MAXIMUM VALVE MAGNETIC FIELD DENSITY -	
ENERGIZED	nT @ I m ( GAMMA @ 6 in)
DE-ENERGIZED	nT @ I m ( GAMMA @ 6 in)
MATERIAL -	보다. 그리 하는 것으로 하는 사용들이 회사로 하는 모든 것
CONSTRUCTION	304L
SEATS	
والمرازي والمرازي والمنافل والمنافل والمنافل والمنافل والمنافل والمنافل والمنافل والمرازي والمنافل والمنافل	المناف والمناف والمناف والمناف والمناف والمناف والمناف والمناف والمنافي والمنافي والمناف والمناف والمناف والمناف

P/N 3795

CONNECTION -	3/8 Braze
INLET	
OUTLET	3/8 Braze
ELECTRICAL	
LAUNCH ENVIRONMENT - RANDOM VIBRATION -	
WIDE BAND LEVEL	16.9 Grms
	g <sup>2</sup> /Hz from <u>20</u> to <u>2000</u> Hz
SINUSOIDAL VIBRATION -	
SWEEP RATE	3 octaves/min 1000
MAX G LEVEL (O-PEAK)	3 g's AT 500 - Hz
	AT Hz
	ATHz
ACOUSTIC VIBRATION -	
OVERALL SOUND PRESSURE LEVEL	dB FOR MINUTES
SHOCK RESPONSE -	
WAVE FORM PEAK-LEVEL OF	G's FORsec
SHOCK SPECTRUM-PEAK RESPONSE OF	G's AT Hz
AMPLIFICATION FACTOR (Q)	
STATIC ACCELERATION	
MASS	$\frac{1.02}{\text{kg}} \qquad (\frac{2.25}{\text{lbm}})$
OTHER SIGNIFICANT CHARACTERISTICS	

Circle Seal Co	poration		
MANUFACTURER James, Pond & C	Clark Div. (30)		
PART NUMBER V-4340			
	Space Shuttle		
PROGRAM	DPACE BRICEIE		
CONTRACTING AGENCY			
CONTRACTING AGENCY			
PRIME CONTRACTOR	Rockwell Internation	onal .	
STATUS			
QUALIFIED			
FLOWN			
LAUNCH VEHICLE			
AVAILABILITY			
		가 가장 있는 것 같은 사람이 가장이 된 기가는 사람들이 만한 물리를 준비하	
COST/PROCUREMENT INFORMATION	1 to 4 units - \$40	000	

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#### 4.2.3 VALVE, PROPELLANT ISOLATION

TYPE	Valve, Propellant Main Supply
DESIGN FLOW MEDIA	N <sub>2</sub> O <sub>4</sub> , MMH
RATED FLOW AT PRESSURE DIFFERENTIAL	.0943 kg/sec @ 3.4 N/cm <sup>2</sup> ,oc (208 lbm/sec @ 5.0 PSID,oF)
	( IDM/sec @ FSID, F)
RESPONSE -	5 000
OPEN	5 sec ms @ Vdc, N/cm <sup>2</sup> INLET PRESSURE,OC
	(PSIA_INLET_PRESSURE,OFOCOCOCOC
CLOSE	ms @ vac, n/cm-, c ( PSIA, oF)
MINIMUM ELECTRICAL PULSE WIDTH -	
TO OPEN	ms @ Vdc (MAXIMUM)
TO CLOSE	ms @ Vdc (MAXIMUM)
OPEN/CLOSED POSITION INDICATION SWITCH	
INTEGRAL FILTER	MICRONS ABSOLUTE
LIFE	
PRESSURES - OPERATING	$\frac{O-210}{N/cm^2} \qquad (\frac{O-305}{PSIA})$
PROOF	306 N/cm <sup>2</sup> (445 PSIA)
BURST	TBS N/cm <sup>2</sup> ( TBS PSIA)
REVERSE CRACKING	N/a-2
OPERATING TEMPERATURE RANGE	-1.1 to 65.5 -1.1 to 065.5 (±30 to 150 0F)
LEAKAGE -	
	.2 sgc/hr 0F @ N/cm <sup>2</sup> ( PSIA)
EXTERNAL	
SUPPLY VOLTAGE RANGE	
	WATTS MAX @ Vdc, °C ( °F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT	
PROPELLANT FLOW	28 Vdc
DIELECTRIC STRENGTH	
NSULATION RESISTANCE	
MAXIMUM VALVE MAGNETIC FIELD DENSITY -	그들은 얼마를 가는 살이 얼마를 먹는데 이번을 받은 통이름이다.
ENERGIZED	nT @ I m ( GAMMA @ 6 in)
DE-ENERGIZED	nT @ I m ( GAMMA @ 6 in)
ATERIAL -	하는 사람들은 그 사이에 가는 사람들이 되는 것이 되었다. 그리고 함께 되는 것을 되었다. 유리는 그리고 있는 사람들이 가는 것이 되었는 것을 통해를 받고 있다. 이 토론 사람들의 기를 하는 것들에 되었다.
CONSTRUCTION	Cres
SEATS	Tetlon/Brass

CONNECTION -	
INLET	
OUTLET	
ELECTRICAL	
LAUNCH ENVIRONMENT -	
RANDOM VIBRATION -	
WIDE BAND LEVEL	· · · · · · · · · · · · · · · · · · ·
MAX POWER SPECTRAL DENSITY	G <sup>2</sup> /Hz from to Hz
SINUSCIDAL VIBRATION -	
SWEEP RATE	OCTAVES/min
MAX G LEVEL (O-PEAK)	AT Hz
	ATHz
	ATHz
ACOUSTIC VIBRATION -	
OVERALL SOUND PRESSURE LEVE	db for MINUTES
SHOCK RESPONSE -	
WAVE FORM PEAK-LEVEL OF	G's FORsec
SHOCK SPECTRUM-PEAK RESPONSE OF	
AMPLIFICATION FACTOR (Q)	
STATIC ACCELERATION	
MASS	kg (61bm)
OTHER SIGNIFICANT CHARACTERISTICS	

PART NUMBERV47200-16	
TART HOPEL	
PROGRAM	LEM
CONTRACTING AGENCY	NASA
PRIME CONTRACTOR	Grumman
PRIME CONTRACTOR	G1 Chimiati
STATUS	'동네다' 이번 왕도 아프리스 유명이 하는 것 같아요? 생선
QUALIFIED	Yes
FLOWN	Yes
LAUNCH VEHICLE	Saturn
AVAILABILITY	Pre engineered hardware made to customer o
i kan di persepangan belang belang ikan di kanagan belang. Melanggan paggan berandan belanggan berandan belanggan belanggan belanggan belanggan belanggan belanggan belan	
COST/PROCUREMENT INFORMATION	Specific quotation can be offered firm
	within 2 weeks of inquiry.

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4.2.3 VALVE, PR	PELLANT	ISOLA	ATION
-----------------	---------	-------	-------

	.0158 m (.625 in) Sol Dual Flow
TYPE	N <sub>2</sub> H <sub>4</sub> and UDMH 50/50
DESIGN FLOW MEDIA	
RATED FLOW AT PRESSURE DIFFERENTIAL  Equiv. orifice .00764 m diam. (.301 in)	kg/sec @N/cm <sup>2</sup> ,oc (lbm/sec @PSID,of)
RESPONSE -	30 ms @ 28 Vdc, 131 N/cm2 INLET PRESSURE, 21 °C
OPEN	(190 PSIA INLET PRESSURE, 70 °F
CLOSE	
CLOSE	( <u>190</u> PSIA, <u>70</u> °F)
LATCHING MECHANISM - TYPE	• • • • • • • • • • • • • • • • • • • •
MINIMUM ELECTRICAL PULSE WIDTH -	
	ms @ Vdc (MAXIMUM)
	ms @ Vdc (MAXIMUM)
	Yes. Some versions - magnetic
INTEGRAL FILTER	25 MICRONS ABSOLUTE
LIFE	
LIFE	T X TO CYCLES
PRESSURES -	
OPERATING	
PROOF	
REVERSE CRACKING	
OPERATING TEMPERATURE RANGE	-53E082.20 FOO EO 180 °F)
LEAKAGE -	$10$ scc/hr oF $2^{\text{H}}4$ $=$ $131$ N/cm <sup>2</sup> ( 190 PSIA)
INTERNAL	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
SUPPLY VOLTAGE RANGE	21-32 Vdc
POWER	40 WATTS MAX @ 30 Vdc, 21 °C ( 70 °F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT PROPELLANT FLOW	30 Vdc
DIELECTRIC STRENGTH	MA MAX. CURRENT LEAKAGE @ VOLTS rms, Hz
INSULATION RESISTANCE	_100 MΩ @ 500 Vdc
MAXIMUM VALVE MAGNETIC FIELD CONSITY - ENERGIZED	nT @   m ( GAMMA @ 6 in)
DE-ENERGIZED	nT @ 1 m ( GAMMA @ 6 in)
MATERIAL - CONSTRUCTION	ST/ST
SEATS	ST/ST - Ethylene Propylene

## ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.3 VALVE, PROPELLANT ISOLATION continued P/N V47200-16

INLET	5/8	Weld stu	bs			
OUTLET	5/8	Weld stu	bs			
ELECTRICAL	P/T					
LAUNCH ENVIRONMENT - RANDOM VIBRATION -						
WIDE BAND LEVEL		G <sub>rms</sub>				
MAX POWER SPECTRAL DENSITY			om	to _	Ha	<b>z</b>
SINUSOIDAL VIBRATION -						
SWEEP RATE	<del></del>	OCTAVES/m	iin			
MAX G LEVEL (O-PEAK)		AT	Hz			
		AT	Hz			
		AT	Hz			
ACOUSTIC VIBRATION -						
OVERALL SOUND PRESSURE LEVEL		dB FOR		_ MINUTES		
SHOCK RESPONSE -						
WAVE FORM PEAK-LEVEL OF		G's FOR _		sec		
SHOCK SPECTRUM-PEAK RESPONSE OF		G/s AT	1 s s	Hz		
AMPLIFICATION FACTOR (Q)						
STATIC ACCELERATION						
MASS	1.0	kg	(	2.3	_lbm)	
OTHER SIGNIFICANT CHARACTERISTICS		en e				

Consolidated Cont	
MANUFACTURER Consolidated Cont	rois corp. (20)
PART NUMBER 3490-5	
(Originally manufactured by National Water Lift Co.)	
	보고는 그리 아름다고 하는 네트랑 하지 않는 내회 공란만의
PROGRAM	Apollo
CONTRACTING AGENCY	
	Rockwell International
PRIME CONTRACTOR	ROCKWEII INCEINACIONAL
STATUS	
QUALIFIED	
FLOWN	Yes
LAUNCH VEHICLE	Saturn
AVAILABILITY	180 days
COST/PROCUREMENT INFORMATION	5 to 10 units - \$8000
	on the product of the first party of the product of the first of the f



TYPE	Solenoid latching; single stage
	MMH or N2 <sup>H</sup> 4/UDMH
DESIGN FLOW MEDIA	
RATED FLOW AT PRESSURE DIFFERENTIAL	kg/sec @N/cm <sup>2</sup> ,15oc
	(33_lbm/sec @ _4PSID,60°F)
RESPONSE -	50 10 0
OPEN	
	(PSIA_INLET_PRESSURE,OF
CLOSE	
	(PSIA,OF)
LATCHING MECHANISM - TYPE	Magnetic
MINIMUM ELECTRICAL PULSE WIDTH -	100 19
TO OPEN	100 ms @ 18 Vdc (MAXIMUM)
TO CLOSE	100 ms @ 18 Vdc (MAXIMUM)
OPEN/CLOSED POSITION INDICATION SWITCH	Poppet position
INTEGRAL FILTER	NO MICRONS ABSOLUTE
LIFE	4000 CYCLES
PRESSURES -	
OPERATING	$\frac{0-258}{1000}$ N/cm <sup>2</sup> ( $\frac{0-375}{1000}$ PSIA)
PROOF	$\frac{382}{\text{N/cm}^2} \qquad (\frac{555}{\text{PSIA}})$
BURST	$\frac{506}{\text{N/cm}^2} \qquad (\frac{735}{\text{PSIA}})$
REVERSE CRACKING	N/A N/cm <sup>2</sup> (PSIA)
OPERATING TEMPERATURE RANGE	4.4to40.5°c (+40to105 °F)
LEAKAGE -	
INTERNAL	20 scc/hr 0F He © 258 N/cm <sup>2</sup> ( 375 PSIA)
EXTERNAL	$\times 10^{-6}$ scc/s OF He $\approx 382$ N/cm <sup>2</sup> ( 555 PSIA)
SUPPLY VOLTAGE RANGE	10.22
	Amps
POWER	2.04 WATES MAX @ 30 Vdc, 21 °C ( 70 °F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT	
PROPELLANT FLOW	
DIELECTRIC STRENGTH	2 mA MAX. CURRENT LEAKAGE w 560 VOLTS rms, Hz
INSULATION RESISTANCE	
MAXIMUM VALVE MAGNETIC FIELD DENSITY -	
ENERGIZED	nT @ I m ( GAMMA @ 6 in)
DE-ENERGIZED	nT @ I m ( GAMMA @ 6 in)
MATERIAL -	
CONSTRUCTION	304 L
SEATS	
	and the control of th

P/N 3490-5

CONNECTION -	
INLET	0.630 o.d.; .025 wall tube
OUTLET	0.630 o.d.: .025 wall tube
ELECTRICAL	leads
LAUNCH ENVIRONMENT - RANDOM VIBRATION -	
WIDE BAND LEVEL	6 <sub>rms</sub>
MAX POWER SPECTRAL DENSITY	$_{15}$ $_{\rm G}^2/_{\rm Hz}$ from $_{\rm 100}$ to $_{\rm 1000}$ Hz
SINUSCIDAL VIBRATION -	
SWEEP RATE	N/A OCTAVES/min
MAX G LEVEL (O-PEAK)	AT Hz
	AT Hz
	ATHz
ACOUSTIC VIBRATION -	
OVERALL SOUND PRESSURE LEVEL	dB FOR MINUTES
SHOCK RESPONSE -	
WAVE FORM PEAK-LEVEL OF	
SHOCK SPECTRUM-PEAK RESPONSE OF	
AMPLIFICATION FACTOR (Q)	
STATIC ACCELERATION	1 70 Gis 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
MASS	0.68   kg   (1.5   1bm)
OTHER SIGNIFICANT CHARACTERISTICS	



MANUFACTURER <u>Marotta Scienti</u>	fic Controls (53)
MODEL NO. MV197K	
PART NUMBER 281233	
PROGRAM	STINGER(improved "RED EYE" Weapon System)
CONTRACTING AGENCY	
PRIME CONTRACTOR	GD/Pomona
STATUS QUALIFIED	Yes:
FLOWNLAUNCH VEHICLE	
AVAILABILITY	기에 보고 있는 기업이 있는 사람이 되는 것이 되는 것이 없는 것이 되는 것이 되었다. 1980년 - 1일 - 1980년 - 1980년 - 1980년 - 1980년 - 1980년 - 1980년 - 1980년 - 1980년 - 1980
COST/PROCUREMENT INFORMATION	

#### 4.2.3 VALVE, PROPELLANT ISOLATION

TYPE	Coaxial, magnetic, shut-off
DESIGN FLOW MEDIA	N <sub>2</sub> , inert gas
	ka/sec a N/cm² °c
RATED FLOW AT PRESSURE DIFFERENTIAL	
Equiv. orifice dia03	(PSID,OF)
RESPONSE -	
OPEN	ms @Vdc,N/cm² INLET PRESSURE,°C
	(PSIA_INLET_PRESSURE,OF
CLOSE	ms @Vdc,N/cm <sup>2</sup> ,OC
	(PSIA,OF)
LATCHING MECHANISM - TYPE	N/A
MINIMUM ELECTRICAL PULSE WIDTH -	
	ms @Vdc (MAXIMUM)ms @Vdc (MAXIMUM)
OPEN/CLOSED POSITION INDICATION SWITCH	
INTEGRAL FILTER	MICRONS ABSOLUTE
LIFE	CYCLES
PRESSURES -	
OPERATING	$0-4698 \text{ N/cm}^2$ ( $0-6815 \text{ PSIA}$ )
PROOF	8628.8 N/cm <sup>2</sup> (12,515 PSIA)
BURST	17,247 N/cm <sup>2</sup> (25,015 PSIA)
REVERSE CRACKING	
OPERATING TEMPERATURE RANGE	$-42 \text{ to } ^{10}\text{c}^{1}$ ambient $(-45 \text{ to } 160^{\circ}\text{F})$
LEAKAGE -	
	scc/hr OF@N/cm <sup>2</sup> (PSIA)
EXTERNAL	scc/s OF@N/cm <sup>2</sup> (PSIA)
SUPPLY VOLTAGE RANGE	
	WATTS MAX @ Vdc, °C ( °F)
	WATTS MAX @
MAXIMUM CONTINUOUS VOLTAGE WITHOUT PROPELLANT FLOW	
INSULATION RESISTANCE	"自己","我们是我们的,我们的一种,我们就会不断的特殊。""我们的是一起,我们就是这种"我们
	. (1)
MAXIMUM VALVE MAGNETIC FIELD DENSITY -	nT @ I m ( GAMMA @ 6 in)
DF-FNFRGIZED	
	The state of the s
ATERIAL - CONSTRUCTION	17-4 PH
	Nylon
TABLE S. C.	그는 물리를 통해 통해 보다는 것이 되었다. 그는 그는 사람들은 사람들이 되었다면 그는 것이 없는 것이 없었다.

P/N 281233

CONNECTION -		
INLET		
OUTLET		
ELECTRICAL		
LAUNCH ENVIRONMENT - RANDOM VIBRATION -		
WIDE BAND LEVEL	G <sub>rms</sub>	
MAX POWER SPECTRAL DENSITY		to Hz
SINUSCIDAL VIBRATION -		
SWEEP RATE	OCTAVES/min	
MAX G LEVEL (O-PEAK)	ATHz	
	AT Hz	
	AT Hz	
ACOUSTIC VIBRATION -		
OVERALL SOUND PRESSURE LEVEL	dB FOR	MINUTES
SHOCK RESPONSE -		
WAVE FORM PEAK-LEVEL OF	G's FOR	sec
SHOCK SPECTRUM-PEAK RESPONSE OF	G's AT	, Hz ( ) i ki ki wali ji ki ani njarija.
AMPLIFICATION FACTOR (Q)		
STATIC ACCELERATION	G¹s	
MASS	<u>•∠</u> kg (	<u>.6</u> 1bm)



OTHER SIGNIFICANT CHARACTERISTICS ..

MANUFACTURER	Valcor	Engineering	Corp.	(33)

PART NUMBER <u>V27200 - 437</u>

CONTRACTING AGENCY	NASA
PRIME CONTRACTOR	Fairchild Camera
STATUS	
QUALIFIED	Yes
FLOWN	Yes
LAUNCH VEHICLE	Saturn
AVAILABILITY	Pre engineered hardware made to customer orde
COST/PROCUREMENT INFORMATION	Specification can be offered firm within
	2 weeks of inquiry.

Apollo

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TYPE	.0063 in (.25 in) N.C. Sol-Latch
DESIGN FLOW MEDIA	GN <sub>2</sub>
RATED FLOW AT PRESSURE DIFFERENTIAL	kg/sec @ N/cm <sup>2</sup> ,oc
MeteringBasic Capacity	(PSID,OF)
KESTUNSE -	20 24 27 2 21 2
OPEN	20 ms $=$ $24$ Vdc, $27$ N/cm <sup>2</sup> INLET PRESSURE, $21$
	( <u>40</u> PSIA INLET PRESSURE, <u>70</u> °
CLOSE	15 ms @ 24 Vdc, 27 N/cm², 21 °c
	( <u>40</u> PSIA, <u>70</u> °F)
LATCHING MECHANISM - TYPE	Magnetic - Dual Coil
MINIMUM ELECTRICAL PULSE WIDTH -	50 22
TO OPEN	
TO CLOSE	50 ms @22 Vdc (MAXIMUM)
OPEN/CLOSED POSITION INDICATION SWITCH	No
INTEGRAL FILTER	MICRONS ABSOLUTE
LIFE	$1 \times 10^5$ CYCLES
PRESSURES -	
OPERATING	$\frac{29}{\text{N/cm}^2} \text{N/cm}^2 \qquad (\frac{43}{\text{PSIA}})$
PROOF	44N/cm <sup>2</sup> (65PSIA)
BURST	$\frac{62}{\text{N/cm}^2} \qquad (\frac{90}{\text{PSIA}})$
REVERSE CRACKING	
OPERATING TEMPERATURE RANGE	$-\frac{17\text{to} + {}^{\circ}\text{c}}{65.5}$ (0 to +150 ° <sub>F</sub> )
LEAKAGE -	GN <sub>2</sub> 17 0 25
INTERNAL	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
EXTERNAL	-
SUPPLY VOLTAGE RANGE	22-32 Vdc
POWER	20 WATTS MAX @ 32 Vdc, 21 °C ( 70 °F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT PROPELLANT FLOW	N/A Vdc
DIELECTRIC STRENGTH	MA MAX. CURRENT LEAKAGE & VOLTS rms, Hz
INSULATION RESISTANCE	100 MΩ @ 500 Vdc
MAXIMUM VALVE MAGNETIC FIELD DENSITY -	
	nT @ I m ( GAMMA @ 6 in)
DE-ENERGIZED	nT @ I m ( GAMMA @ 6 in)
AATERIAL -	성 등 경우, 남자 자연 보는 사람이 다른 사람들이 얼마나 하나 없는데 그렇게 다른 사람들이 다른 사람들이 다른 사람들이 다른 사람들이 되었다.
CONSTRUCTION	Bura N/ST/ST
SEATS	

P/N V27200-437

CONNECTION -	MS2438654
OUTLET	Special tube
ELECTRICAL	Solder lugs
LAUNCH ENVIRONMENT -	
RANDOM VIBRATION -	
WIDE BAND LEVEL	G <sub>rms</sub>
MAX POWER SPECTRAL DENSITY	G <sup>2</sup> /Hz from to Hz
SINUSOIDAL VIBRATION -	
SWEEP RATE	OCTAVES/min
MAX G LEVEL (O-PEAK)	AT Hz
	AT Hz
	ATHz
ACOUSTIC VIBRATION -	
OVERALL SOUND PRESSURE LEVEL	dB FOR MINUTES
SHOCK RESPONSE -	
WAVE FORM PEAK-LEVEL OF	G's FORsec
SHOCK SPECTRUM-PEAK RESPONSE OF	
AMPLIFICATION FACTOR (Q)	
STATIC ACCELERATION	o <u>anno an</u> <b>G's</b> jilong an Allging an opas an east out
MASS	$\frac{0.15}{\text{kg}} \qquad (\frac{0.35}{\text{lbm}})$
OTHER SIGNIFICANT CHARACTERISTICS	
Motoring orifice (renlacesh	

MANUFACTURER Consolidated Controls Corp.(20)

3490-4 PART NUMBER (Originally manufactured by National Water Lift Co.)

Apollo
Rockwell International
Yes Yes
Yes
Saturn
_180 days
5 to 10 units - \$8000
4.2.3-97

#### 4.2.3 VALVE, PROPELLANT ISOLATION

TYPE	Solenoid latching; single stage
DESIGN FLOW MEDIA	$N_2O_4$
RATED FLOW AT PRESSURE DIFFERENTIAL	.29 kg/sec @ 4 N/cm <sup>2</sup> , 15 °c (.66 lbm/sec @ 7 PSID, 60 °F)
RESPONSE - OPEN	50 ms e 18 Vdc, N/cm2 INLET PRESSURE, C
CLOSE	(PSIA_INLET_PRESSURE,OF)  50 ms @ 18 Vdc,N/cm <sup>2</sup> ,OC
LATCHING MECHANISM - TYPE	Magnetic
MINIMUM ELECTRICAL PULSE WIDTH - TO OPEN TO CLOSE  OPEN/CLOSED POSITION INDICATION SWITCH	100 ms @ 18 Vdc (MAXIMUM) 100 ms @ 18 Vdc (MAXIMUM) Poppet position
INTEGRAL FILTER	NO MICRONS ABSOLUTE
LIFE	4000 CYCLES
PRESSURES - OPERATING PROOF BURST REVERSE CRACKING	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
OPERATING TEMPERATURE RANGE	( <u></u>
INTERNAL	
SUPPLY VOLTAGE RANGE	18-33 Vdc 2.04 Amps 2.04 WATHS=MAX @ 30 Vdc, 21 °C ( 70 °F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT	33 <sub>Vdc</sub>
DIELECTRIC STRENGTH	ma MAX. CURRENT LEAKAGE & 560 VOLTS rms, Hz
INSULATION RESISTANCE	1000 MΩ @ 500 Vdc
MAXIMUM VALVE MAGNETIC FIELD DENSITY - ENERGIZED	nT @ I m ( GAMMA @ 6 in)nT @ I m ( GAMMA @ 6 in)
MATERIAL - CONSTRUCTION	304 L TFE

4.2.3 VALVE, PROPELLANT ISOLATION continued P/N 3490-4

CONNECTION -	
INLET	0.630 o.d.; .025 wall tube
OUTLET	0.630 o.d.; .025 wall tube
ELECTRICAL	leads
LAUNCH ENVIRONMENT -	
RANDOM VIBRATION -	16 /
WIDE BAND LEVEL	7 M V
MAX POWER SPECTRAL DENSITY	$\frac{15}{\text{G}^2/\text{Hz}}$ from $\frac{100}{\text{Hz}}$ to $\frac{1000}{\text{Hz}}$
SINUSOIDAL VIBRATION -	27/4
SWEEP RATE	N/A OCTAVES/min
MAX G LEVEL (O-PEAK)	AT Hz
	ATHz
	AT Hz
ACOUSTIC VIBRATION -	
OVERALL SOUND PRESSURE LEVEL	dB FOR MINUTES
SHOCK RESPONSE -	
WAVE FORM PEAK-LEVEL OF	30 G's FOR .011 sec
SHOCK SPECTRUM-PEAK RESPONSE OF	
AMPLIFICATION FACTOR (Q)	
STATIC ACCELERATION	G's
MASS	0.68kg (1.51bm)
OTHER SIGNIFICANT CHARACTERISTICS	

MANUFACTURER	Consolidated Controls Corp.	
	(20)	
PART NUMBER	72513	
PROGRAM CONTRACTING AGE		
PRIME CONTRACTO	Lockheed Missiles and Space Co.	
STATUS  QUALIFIED  FLOWN  LAUNCH VEHICE		
AVAILABILITY		- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
COST/PROCUREMENT	INFORMATION 5 to 10 units - \$8000	
DEDENIA DAC	E BLANK NOT FILMED	

#### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET

#### 4.2.3 VALVE, PROPELLANT ISOLATION

TYPE	Propellant management and isolation
	$N_2H_4$
DESIGN FLOW MEDIA	
RATED FLOW AT PRESSURE DIFFERENTIAL	(
ATADANOT	( )
RESPONSE -	
	(PSIA INLET PRESSURE,OF)
CLOSE	
	(PSIA,OF)
LATCHING MECHANISM - TYPE	Magnetic
MINIMUM ELECTRICAL PULSE WIDTH -	75
TO OPEN	
OPEN/CLOSED POSITION INDICATION SWITCH	Yes 100
INTEGRAL FILTER	100 MICRONS ABSOLUTE
LIFE	CYCLES
PRESSURES -	0-237
PROOF	
BURST	$\frac{372}{372} \text{ N/cm}^2 \qquad (\frac{540}{540} \text{ PSIA})$
REVERSE CRACKING	$\frac{275-344}{\text{N/cm}^2}$ $\frac{400-500}{\text{PSIA}}$
OPERATING TEMPERATURE RANGE	+4.4to+60 °C ( <u>+40to+140</u> ° <sub>F</sub> )
LEAKAGE -	CN
INTERNAL	$\frac{10}{10^{-3}} \sec/hr \ OF \frac{GN_2}{r} = \frac{237}{10^{-3}} \ N/cm^2 \ (\frac{0-345}{10^{-3}} \ PSIA)$
EXTERNAL	$1 \times 10^{-6}$ scc/s OF He @ 237 N/cm <sup>2</sup> ( 345 PSIA)
SUPPLY VOLTAGE RANGE	24-33 vdc
POWER	2.42 amps   30   Vdc, 21 °C ( 70 °F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT PROPELLANT FLOW	30vdc
DIELECTRIC STRENGTH	250 MA MAX. CURRENT LEAKAGE @ 500 VOLTS rms, 60 Hz
INSULATION RESISTANCE	1000 MΩ @ 500 Vdc
MAXIMUM VALVE MAGNETIC FIELD DENSITY -	nT @ I m ( GAMMA @ 6 in)
DE-ENERGIZED	nT @ I m ( GAMMA @ 6 in)
MATERIAL -	
CONSTRUCTION	304 L
SEATS	

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.3 VALVE, PROPELLANT ISOLATION continued P/N 72513

CONNECTION -		
INLET	3/4 Braze	
OUTLET	3/4 Braze	
ELECTRICAL		
LAUNCH ENVIRONMENT - RANDOM VIBRATION -	16.9	
MAX POWER SPECTRAL DENSITY	$\frac{16.9}{\frac{\text{G}_{\text{rms}}}{\text{G}^2/\text{Hz from}}} = \frac{20}{100} = \frac{2000}{100} = \frac{1}{100}$	
SINUSOIDAL VIBRATION - SWEEP RATE	3 OCTAVES/min 1000 5 g's AT 500 - Hz	
	AT Hz	
ACOUSTIC VIBRATION - OVERALL SOUND PRESSURE LEVEL	dB FOR MINUTES	
SHOCK RESPONSE -		
WAVE FORM PEAK-LEVEL OF		
SHOCK SPECTRUM-PEAK RESPONSE OF		
AMPLIFICATION FACTOR (Q)		
MASS		
OTHER SIGNIFICANT CHARACTERISTICS		

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.3 VALVE, PROPELLANT ISOLATION

MANUFACTURER Valcor Engineeri	ng Corp. (33)
MANUTACIONEN TO	
PART NUMBER <u>V27200-320</u>	
FART NUMBER VETEOUS SEC	
PROGRAM	APS
CONTRACTING AGENCY	Japan
PRIME CONTRACTOR	Sunny Ltd., Tokyo
STATUS	
QUALIFIED	
FLOWN	
LAUNCH VEHICLE	
	성인생물은 그리고 하는 것은 그를 가는 그것 같아 되었다. 그렇게 없었다. 없
AVAILABILITY	Pre engineered hardware made to customer orde
COST/PROCUREMENT INFORMATION	Specific quotation can be offered firm
	within 2 weeks of inquiry.
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JANE BLANK WOOD	

#### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET

#### 4.2.3 VALVE, PROPELLANT ISOLATION

TYPE	
DESIGN FLOW MEDIA	H <sub>2</sub> O <sub>2</sub>
RATED FLOW AT PRESSURE DIFFERENTIAL  Capacity $C_{v} = .07$ minimum	kg/sec @N/cm <sup>2</sup> ,oc (lbm/sec @PSID,oF)
RESPONSE -	
OPEN	20 ms @ 24 Vdc,434 N/cm <sup>2</sup> INLET PRESSURE, 21 °C (630 PSIA INLET PRESSUPE, 70 °F)
CLOSE	ms @Vdc,434_N/cm <sup>2</sup> ,21°C (630_PSIA,70_°F)
LATCHING MECHANISM - TYPE	N/A
MINIMUM ELECTRICAL PULSE WIDTH - TO OPEN	
TO CLOSE	ms @ Vdc (MAXIMUM)
OPEN/CLOSED POSITION INDICATION SWITCH	N/A
INTEGRAL FILTER	N/A MICRONS ABSOLUTE
LIFE	5 x 10 CYCLES
PRESSURES -	
OPERATING	$\frac{444}{\text{N/cm}^2} \qquad (\underline{645} \text{PSIA})$
PROOF	630 N/cm <sup>2</sup> ( <u>915</u> PSIA)
BURST REVERSE CRACKING	
OPERATING TEMPERATURE RANGE	
	( <u></u>
LEAKAGE -	$10$ scc/hr of $\frac{\text{H}_2\text{O}_2}{\text{e}}$ e N/cm <sup>2</sup> ( 630 PSIA)
EXTERNAL	H <sub>0</sub> O <sub>2</sub>
SUPPLY VOLTAGE RANGE	
POWER	40 WATTS MAX @ 30 Vdc, 21 °C ( 70 °F)
MAXIMUM CONTINUOUS VOLTAGE WITHOUT PROPELLANT FLOW	
DIELECTRIC STRENGTH	MA MAX. CURRENT LEAKAGE @VOLTS rms, Hz
INSULATION RESISTANCE	
MAXIMUM VALVE MAGNETIC FIELD DENSITY -	그리고 말하는 하는 것이 얼마를 가고 있는 바로 바로 불만했다.
ENERGIZED	nT @ I m ( GAMMA @ 6 in)
DE-ENERGIZED	nT @ I m ( GAMMA @ 6 in)
MATERIAL -	
CONSTRUCTION	ST/ST
SEATS	ST/ST - Teflon 4.2.3-106

#### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.3 VALVE, PROPELLANT ISOLATION continued P/N V27200-320

CONNECTION -			
INLET		·	
OUTLET	MS 33654-4		
ELECTRICAL	P/T		
LAUNCH ENVIRONMENT -			
RANDOM VIBRATION -			
WIDE BAND LEVEL	G		
MAX POWER SPECTRAL DENSITY	·	to	Hz
SINUSOIDAL VIBRATION -			
SWEEP RATE	OCTAVES/min		
MAX G LEVEL (O-PEAK)			
	AT Hz		
	AT Hz		talian di Kabupatèn Balandaran Balandaran Balandaran Balandaran Balandaran Balandaran Balandaran Balandaran Ba Balandaran Balandaran Balandaran Balandaran Balandaran Balandaran Balandaran Balandaran Balandaran Balandaran
ACOUSTIC VIBRATION -			
OVERALL SOUND PRESSURE LEVEL	dB FOR	MINUTES	
SHOCK RESPONSE -			
WAVE FORM PEAK-LEVEL OF	G's FOR	_ sec	
SHOCK SPECTRUM-PEAK RESPONSE OF	G's AT	_ Hz	
AMPLIFICATION FACTOR (Q)			
STATIC ACCELERATION			
MASS		2.5	
MASS	kg (	I DI	<b>y</b> předsta na nace († 1967) Předsta nace († 1967)
OTHER SIGNIFICANT CHARACTERISTICS			
		_	
Internal permeable iron is 17-4F	H. Valve is suita	ble for	N2H4 and

MANUFACTURER	Tavco, Inc.	(16)		
MANOFACIONEN				
	000101			
PART NUMBER	2391214			
PROGRAM				
CONTRACTING A	AGENCY		 	
PRIME CONTRAC	CTOR			
STATUS				
QUALIFIED.		Yes		
FLOWN				
LAUNCH VEH	IICLE			
AVAILABILITY.				
COST/PROCUREM	MENT INFORMATION			
	ing and the second of the seco			
PRECEDING I	PAGE BLANK NOR			

TYPE					1000
	N <sub>2</sub> , CO <sub>2</sub>				
DESIGN FLOW MEDIA					
CRACKING PRESSURE	$\frac{1.7 \pm .17}{}$	_N/cm <sup>2</sup>		$(\frac{2.5}{}$	.25 PSIA)
RESEAT PRESSURE	1.3				O PSIA)
RATED FLOW AT PRESSURE DIFFERENTIAL	$4 \times 10^2$	scc/s e	N/cm <sup>2</sup> ,		°c
	(1	SCFM @	PSID, _	<del></del>	°F)
BURST DIAPHRAGM RUPTURE PRESSURE	·	N/cm <sup>2</sup>		(	PSID)
LIFE					
BURST DIAPHRAGM		CYCLES AT ZERO TO		TO Z	ERO N/cm <sup>2</sup>
		(ZERO TO		TO Z	ERO PSIA)
VALVE		CYCLES			
PROOF PRESSURE	· · · · · · · · · · · · · · · · · · ·	. N/cm <sup>2</sup>		(	PSIA)
BURST PRESSURE					PSIA)
BUKSI PRESSURE		, N/CM <sup>-</sup>		(	PSIA)
OPERATING TEMPERATURE RANGE	_	°c		(	°F)
LEAKAGE -					
INTERNAL	0	scc/hr OF			_N/cm <sup>2</sup>
			(_		
BURST DIAPHRAGM		scc/s OF			_N/cm <sup>2</sup>
EXTERNAL		scc/s OF			
			(_		_ PSIA)
MATERIAL -					
CONSTRUCTION		<u> </u>			·
SEAT					
CONNECTIONS -					
INLET				A Section 1	
OUTLET					
MASS	.04	_ kg	0.1	lbm)	
OTHER SIGNIFICANT CHARACTERISTICS					

MANUFACTURER	Fairchild Indus Stratos Div.	tries (31)				
PART NUMBER	834000					
PROGRAM		OWS				
CONTRACTING A	GENCY	NASA				
PRIME CONTRACT	TOR	NASA				
STATUS		Yes				
FLOWN	CLE	No				
AVAILABILITY.		Not in pro	oduction.	Available	on speci	<u>al o</u> rde
COST/PROCUREME	ENT INFORMATION	\$1000				

YPE	Inverte	d, spring loa	ded	
ESIGN FLOW MEDIA	GNo			
RACKING PRESSURE	15.6 + .3	34 N/cm <sup>2</sup>	(	22.7 ± .5 PSIA)
ESEAT PRESSURE	14.9	_N/cm <sup>2</sup>	. · · · · · · · · · · · · · · · · · · ·	21.7 PSIA)
ATED FLOW AT PRESSURE DIFFERENTIAL	10	scc/s • 6.2 SCFM • 9.0	N/cm <sup>2</sup> , PSID,	°c °F)
URST DIAPHRAGM RUPTURE PRESSURE	<del></del>	N/cm <sup>2</sup>	(	PSID)
BURST DIAPHRAGM		(ZERO TO		TO ZERO N/cm <sup>2</sup> TO ZERO PSIA)
ROOF PRESSURE	22.5	_ N/cm <sup>2</sup>	(	32.7 PSIA)
URST PRESSURE	34.9	_N/cm <sup>2</sup>	(.	50.7 PSIA)
PERATING TEMPERATURE RANGE	+15to +35	_ °c	(t	59to +95° <sub>F)</sub>
EAKAGE - INTERNAL	36			4.6 N/cm <sup>2</sup> 1.2 PSIA)
BURST DIAPHRAGM			@	N/cm <sup>2</sup>
EXTERNAL	59	scc/s OF		PSIA)N/cm <sup>2</sup> PSIA)
ATERIAL - CONSTRUCTION				
ONNECTIONS -				
INLET	0047 m	(.18 in) tub	е	
OUTLET		(.25 in) tub		
	.068	kg (	0.15	_ l bm)

	Characa Empire	·i (16)		
MANUFACTURER _	Sterer Engineer	ing Co. (16)		
	48343			
PART NUMBER	40343			
		7791.3		
PROGRAM		Viking '75		
		NASA		
CONTRACTING AGE	ENCY	MADA		
DOLLIE CONTRACTO	A.D.			
PRIME CUNIKACIO	OR			
STATUS				
		Yes		
QUALIFIED				<del></del>
FI OWN	<b> </b>	1975	<u> 1900 - Namerica Descriptor de la compansión de la compa</u>	
LAUNCH VEHIC	CLE			
A 14 A 4 1 A D 1 L 1 TV				
AVAILABILITY				
				n de en 1900 et 1944 et 1945 et 1950. Anno 1960 et
COST / PROCHIDENCE	T INFORMATION			
COSTITIOUNCMEN	11 INDVICTATION			
			<u> </u>	

IYPE		· · · · · · · · · · · · · · · · · · ·		<u> </u>	
DESIGN FLOW MEDIA	_GN <sub>2</sub>			. ·	
CRACKING PRESSURE	44+ 3	_N/cm <sup>2</sup>		(6 <u>5</u> + 5	PSIA)
RESEAT PRESSURE					
RATED FLOW AT PRESSURE DIFFERENTIAL		scc/s e 41 SCFM e 60			
BURST DIAPHRAGM RUPTURE PRESSURE		N/cm <sup>2</sup>	in the second	(	PSID)
LIFE - BURST DIAPHRAGM		(ZERO TO		TO ZER	
VALVE	2000	CYCLES			
PROOF PRESSURE	93.0	_N/cm <sup>2</sup>	-	( 135	PSIA)
BURST PRESSURE	355	_N/cm <sup>2</sup>		(515	PSIA)
OPERATING TEMPERATURE RANGE		_ °c	(	(	°F)
LEAKAGE -		-		)_52 p	(412
BURST DIAPHRAGM			@	N	/cm <sup>2</sup>
EXTERNAL	1 <u>.3×10<sup>-5</sup></u>	scc/s OF GN	( 	P +2 N 51 P	/cm <sup>2</sup>
MATERIAL - CONSTRUCTION					
CONNECTIONS - INLET OUTLET					
MASS	0.1	kg (	0.4	1bm)	
OTHER SIGNIFICANT CHARACTERISTICS					

	4 A m 3
MANUFACTURER Whittaker Corp.	. (37)
PART NUMBER 145485 (-7)	
PROGRAM	Agena Discoverer
CONTRACTING AGENCY	
PRIME CONTRACTOR	Lockheed Missile and Space Div.
PRIME CONTRACTOR	Lockheed Missile and Space Div.
PRIME CONTRACTOR	Lockheed Missile and Space Div.
STATUS	
STATUS QUALIFIED	Lockheed Missile and Space Div.  Yes. Whittaker Qual. Test Report No. 60-76
STATUS  QUALIFIED  FLOWN	
STATUS QUALIFIED	
STATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE	
STATUS  QUALIFIED  FLOWN	
STATUS  QUALIFIED  FLOWN  LAUNCH VEHICLE	

#### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET

4.2.4 VALVE, RELIEF	Tanana and a same and a same a
1YPE	Incorporates a pressure actuating (pilot) popper and differential piston relief valve with squib override.
	He gas + UDMH vapors and He gas + IRFNA vapors
CRACKING PRESSURE	$\frac{51}{\text{N/cm}^2} \qquad (\frac{75}{\text{PSIA}})$
RESEAT PRESSURE	$\frac{48}{\text{N/cm}^2} \qquad (\frac{71}{\text{PSIA}})$
RATED FLOW AT PRESSURE DIFFERENTIAL	$\frac{3.7 \times 10^4}{\text{scc/s}} = \frac{42}{62} \text{ N/cm}^2, \frac{\text{°C}}{\text{F}}$
BURST DIAPHRAGM RUPTURE PRESSURE	N/cm <sup>2</sup> (PSID)
LIFE - BURST DIAPHRAGM	CYCLES AT ZERO TOTO ZERO N/cm <sup>2</sup>
	(ZERO TO TO ZERO PSIA)
VALVE	CYCLES
PROOF PRESSURE	$\frac{93.0 \text{ N/cm}^2}{\text{N/cm}^2} \qquad (\frac{135 \text{ PSIA}}{\text{PSIA}})$
BURST PRESSURE	
OPERATING TEMPERATURE RANGE	$0 to 48.8 \circ_{\mathbb{C}} \qquad \text{Ambient} \qquad (\underline{+32 to}  {}^{120}_{F})$
LEAKAGE -	1200 scc/hr 0F @ 47 N/cm <sup>2</sup>
	( <u>69</u> PSIA)
BURST DIAPHRAGM	scc/s OF @N/cm <sup>2</sup>
EXTERNAL	(PSIA)scc/s OF
	(PSIA)
MATERIAL -	
CONSTRUCTION	
SEAT	
CONNECTIONS -	MS24385-6 for 3/8 T.S.
OUTLET	
MASS	kg (1bm)
OTHER SIGNIFICANT CHARACTERISTICS	

See also Whittaker Qualification Test Report No. 60-762.

MANUFACTURER	Tavco, Inc.	(16)			
PART NUMBER _	2396249			•	
PROGRAM				- <u> </u>	
CONTRACTING AC	BENCY				
PRIME CONTRACT	ror				
STATUS					
QUALIFIED		Yes			
LAUNCH VEHI	CLE				
AVAILABILITY			<u> </u>		
COST/PROCUREME	NT INFORMATION				
					•
		-		<del></del>	

TYPE				
DESIGN FLOW MEDIA				
t and		) _	·	140 + 10
CRACKING PRESSURE	96.5 -0.0	N/cm <sup>2</sup>	( . <u></u>	$\frac{140 \pm 10}{} \text{ PSIA})$
RESEAT PRESSURE	. <del></del>	_ M/cm <sup>2</sup>	(	110 PSIA)
RATED FLOW AT PRESSURE DIFFERENTIAL	$4.7 \times 10^{3}$	_ K/cm <sup>2</sup> } _ scc/s @	N/cm <sup>2</sup> .	o <sub>C</sub>
		SCFM @		
BURST DIAPHRAGM RUPTURE PRESSURE		N/cm <sup>2</sup>	1	PSID)
		,	\	
LIFE -				
BURST DIAPHRAGM				_ TO ZERO N/cm²
VALVE				_ TO ZERO FS(A)
PROOF PRESSURE	382	_N/cm <sup>2</sup>	(_	555 PSIA)
BURST PRESSURE	506	N/cm <sup>2</sup>	(	735 PSIA)
OPERATING TEMPERATURE RANGE		°c	(_	oF)
LEAKAGE -				and State of the S
INTERNAL	0	scc/hr OF	@	N/cm <sup>2</sup>
				PSIA)
BURST DIAPHRAGM		scc/s OF		
EXTERNAL	•			PSIA)
EXTERNAL	<u> </u>	scc/s OF		N/cm² PSIA)
			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	F3(A)
MATERIAL -				
CONSTRUCTION			<del>gan dajiran daj</del> Seleji Tabah ji jela	
SEAT	-			
CONNECTIONS -			i di Tanan Salah Kajaratan Bijiti k	
INLET				
OUTLET				
MASS		kg(	<del></del>	l bm)
OTHER CIGNICICANT CHARACTERISTICS				

MANUFACTURER	Tavco, Inc.	(16)
_		
	2391246	
PART NUMBER	2391240	
		그림, 그리는 사람은 사람이 되는 그를 하게 하셨다면요.
		필요 얼마 얼마 얼마 하고 이 안 됐는 그 작가 없는 한 그 없었다.
		하는 하는 아이들 이 하는데 얼굴을 받는 바람들을 모르고 했다. 그는
PROGRAM		
CONTRACTING AG	ENCY	그리고 하는 연극하는 중심 인계 되는 그는 모은 보고 되었다.
OUNTRACTING AG		
PRIME CONTRACTO	OR	오. 이 이 기 사진 아름이 되었다. 나는 내가 들는 이글로 받는 모양이
TRIME CONTRACT		
STATUS		
	• • • • • • • • • • • • • • • •	
	and the second s	n en <mark>de 1982 en </mark>
LAUNCH VEHI	CLE	
		사람은 남은 불리는 눈으로 되고 있을 것 같아. 그 중 요리를 다
AVAILABILITY		사용 보고 있는 것들은 사용을 보고 있다. 그는 사람들은 사용을 받는 것들은 사용을 받는 것들이 되었다. 그는 것들이 되었다. 그는 것들은 사용을 받는 것들이 되었다. 그는 것들은 것들이 되었다. 
COST/PROCUREMEN	NT INFORMATION	요즘 전에 가장에 보면 하지만 중요한 중요한 경우를 보고 있다. 그런 경우 전쟁을 보고 있다. 그런 것이 되었다. 1995년 - 1일 1995년 - 1997년 1일
		프로그램 : [1] : [1] : [1] : [1] : [1] : [1] : [2]
	Balleriae alientra de la compa	
		된 그릇이 무슨 내고 이 경찰들은 하고 말았다. 전 자신 전략으로 활혹

1YPE			<del></del>	
DESIGN FLOW MEDIA	Не			
CRACKING PRESSURE	165	N/cm <sup>2</sup>	(	240 PSIA)
RESEAT PRESSURE	151	N/cm <sup>2</sup>	(.	20_ PSIA)
RATED FLOW AT PRESSURE DIFFERENTIAL		_ scc/s @		
BURST DIAPHRAGM RUPTURE PRESSURE		_ N/cm <sup>2</sup>	(	PSID)
BURST DIAPHRAGM	79.2	(ZERO TO _ CYCLES _ N/cm <sup>2</sup>	(	TO ZERO PSIA) 115 PSIA) 1215 PSIA)
OPERATING TEMPERATURE RANGE		<u></u>	(.	°F)
LEAKAGE - INTERNAL  BURST DIAPHRAGM		_scc/s OF	(	N/cm <sup>2</sup> PSIA) N/cm <sup>2</sup> PSIA)
EXTERNAL		_scc/s OF		N/cm <sup>2</sup>
MATERIAL - CONSTRUCTION				PSIA)
CONNECTIONS - INLET				
MASS	0.04	kg (	0.09	_ 1 bm)
OTHER SIGNIFICANT CHARACTERISTICS				

MANUFACTURER HTL Industries.	Inc. (21)
PART NUMBER 230200-2 2302	
PROGRAM,	Mariner 69
CONTRACTING AGENCY	
PRIME CONTRACTOR	TRW Systems
STATUS	
QUALIFIED	yes, by TRW
LAUNCH VEHICLE	Atlas Agen <b>a</b>
AVAILABILITY	
COST/PROCUREMENT INFORMATION	44 m - 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.

TYPE	Test Port (1/4 Tube Size) Welded
DESIGN FLOW MEDIA	GN <sub>2</sub>
CRACKING PRESSURE	188-199 N/cm <sup>2</sup> (274to 289 PSIA)
RESEAT PRESSURE	
RATED FLOW AT PRESSURE DIFFERENTIAL	$\frac{1.0 \times 10^{3}}{(2.3)} \text{ scc/s} = \frac{203}{295} \text{ N/cm}^{2}, \frac{21}{70} \text{ oc}$
BURST DIAPHRAGM RUPTURE PRESSURE	188-304 N/cm <sup>2</sup> (274+0304 PSID)
LIFE - BURST DIAPHRAGM	CYCLES AT ZERO TOTO ZERO N/cm <sup>2</sup> (ZERO TOTO ZERO PSIA)  1000CYCLES
PROOF PRESSURE	
BURST PRESSURE	
OPERATING TEMPERATURE RANGE	$-59 \text{ to} \\ +48.8 \text{ °c} \qquad (-74^{\circ}\text{F to} \\ (-120)^{\circ}\text{F})$
	1 X 10 scc/s OF He
MATERIAL - CONSTRUCTION	
CONNECTIONS -	
OUTLET	kg (1.15lbm)

MANUFACTURER Ametek/Calmec D	iv. (41,16)	
PART NUMBER 1113		
PROGRAM	Mariner '71	
CONTRACTING AGENCY	NASA	
PRIME CONTRACTOR		
STATUS		
	Yes	
QUALIFIED	Yes	
FLOWN		
LAUNCH VEHICLE	Atlas Agena	
AVAILABILITY		
		사람들 사람이 되었다.
COST/PROCUREMENT INFORMATION	10 units - \$5700	
	발전: 작가 생님, 대학에 문제, 생각학	

1YPE				
DESIGN FLOW MEDIA	N <sub>2</sub>			
CRACKING PRESSURE	233	_ N/cm <sup>2</sup>	( _	340 PSIA)
RESEAT PRESSURE	199	_N/cm <sup>2</sup>	(_	290 PSIA)
RATED FLOW AT PRESSURE DIFFERENTIAL		scc/s e 234 SCFM @ 340		
BURST DIAPHRAGM RUPTURE PRESSURE				PSID)
LIFE - BURST DIAPHRAGM				_TO ZERO N/cm <sup>2</sup> _TO ZERO PSIA)
PROOF PRESSURE	•	2		PSIA)
BURST PRESSURE	$\frac{230 \pm 6.}{71}$	O N/cm <sup>2</sup>	`` <b>\</b>	$\frac{35 \pm 10}{160} \text{PSIA}$
OPERATING TEMPERATURE RANGE	-37 to <sup>71</sup> .	<b></b> °c	(	35 to <sup>+160</sup> <sub>F)</sub>
LEAKAGE - INTERNAL			(	N/cm <sup>2</sup> PSIA)
BURST DIAPHRAGM			(	N/cm <sup>2</sup> N/cm <sup>2</sup> N/cm <sup>2</sup> PSIA)
MATERIAL - CONSTRUCTION	Welded S	.S.		
CONNECTIONS - INLET				
MASS	.612	_ kg (	1.35	bm)

MANUFACTURER	HTL Industries,	Inc. (21)		
· · · · · · · · · · · · · · · · · · ·				
DADE NUMBER	193790-4			
PART NUMBER _	173770-4			
PROGRAM		_SE-5		
PRUGRAM			the state of the s	
CONTRACTING AG	ENCY			
DO LIVE CONTRACT	OR	Rockwell Int'l	, Rocketdyne Div.	
PRIME CONTRACT	UK	ROCKWEIT IIIC I	10 91000 110 1211	
			그는 걸 이 기가 하는 사람들	
STATUS				
OHAL LEIED		yes, by Rocket	dvas	
FLOWN				
LAUNCH VEHI	CLE		는 사람들이 있는 것이 되었다. 그 것이 가장 그 것이다. 그렇게 하셨다는 것이 나와 사용을 가게 들어 보였다.	
AVAILABILITY				
			목욕하는 사람들의 얼마 하면 하는	
COST / DEACHDENE	NT INFORMATION			
OUD I / I NUOUNEME!				

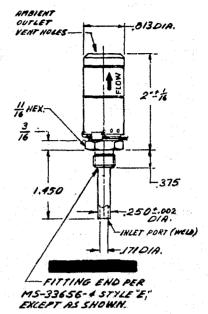
TYPE	Direct a	cting, j	pneuma	tic		
DESIGN FLOW MEDIA	$GN_2$ , $N_2O$	4, N <sub>2</sub> H <sub>4</sub>				
CRACKING PRESSURE	234	_N/cm <sup>2</sup>		•	_340_	PSIA)
RESEAT PRESSURE	220	N/cm <sup>2</sup>		(	320	PSIA)
RATED FLOW AT PRESSURE DIFFERENTIAL	2360 (50					
BURST DIAPHRAGM RUPTURE PRESSURE	N/A	N/cm <sup>2</sup>			N/	APSID)
BURST DIAPHRAGM						
PROOF PRESSURE28	31 + 3	N/cm <sup>2</sup>		4	<u>09 +</u>	5 PSIA)
BURST PRESSURE				Ę.	39 +	5 PSIA)
OPERATING TEMPERATURE RANGE	53to71.1	°c		(-	<b>6</b> 5to1	60_°F)
LEAKAGE -						
INTERNAL	5	scc/hr OF	GN <sub>2</sub>	<u> </u>	-219 to 319	N/cm <sup>2</sup>
BURST DIAPHRAGM	N/A	_scc/s OF _				
EXTERNAL	10	_scc/s OF_	GN <sub>2</sub>	@ 28	1 <u>+3</u> 9 <u>+</u> 5	N/cm <sup>2</sup>
MATERIAL - CONSTRUCTION	Cres and	Teflon				
CONNECTIONS -						
OUTLET	.49	_ kg	(	1.1	_1bm)	
OTHER SIGNIFICANT CHARACTERISTICS						

ATTITUDE	CONTROL	PROPULSION	COMPONENT	DATA	SHEET

4.2.4 VALVE, RELIEF

MANUFACTURER SieBelAir Corp. (51)

PART NUMBER 1488, BASIC



Scale: Half Size

PROGRAM	APOLLO
CONTRACTING AGENCY	
PRIME CONTRACTOR	Aerojet Liquid Rocket Co.
STATUS	
QUALIFIED	Yes
FLOWN	Yes
LAUNCH VEHICLE	Saturn
AVAILABILITY	8 to 16 weeks ARO depending on quantity
COST/PROCUREMENT INFORMATION	

1YPE	Inverted direct operated GN <sub>2</sub> , GHe, Air
DESIGN FLOW MEDIA	
CRACKING PRESSURE	$\frac{241 + 6}{\text{N/cm}^2} \qquad \qquad (\frac{350 + 10 \text{ psid}}{\text{rsim}})$
RESEAT PRESSURE	224 N/cm <sup>2</sup> ( 325 ‡sqx;
RATED FLOW AT PRESSURE DIFFERENTIAL	$\frac{9.4 \times 10^2}{(2.0 \text{ SCFM } = \frac{255}{370} \text{ PSID}, \frac{21}{70} \text{ °F})}$
BURST DIAPHRAGM RUPTURE PRESSURE	<u>N/A</u> N/cm <sup>2</sup> (PSID)
LIFE - BURST DIAPHRAGM	N/A CYCLES AT ZERO TO TO ZERO N/cm <sup>2</sup> (ZERO TO TO ZERO PSIA)
VALVE	
PROOF PRESSURE	492 N/cm <sup>2</sup> ( 715 PSIA)
BURST PRESSURE	$1044 \text{ N/cm}^2$ ( 1515 PSIA)
OPERATING TEMPERATURE RANGE	$\frac{-53 \text{ to}}{71.1}$ C ( $\frac{-65 \text{ to}}{6}$ )
LEAKAGE - INTERNAL	$\frac{2.0}{\text{scc/hr OF}} = \frac{\text{GN}_2}{\text{GN}_2} = \frac{199}{\text{N/cm}^2}$
BURST DIAPHRAGM	N/A scc/s OF ( PSIA)
EXTERNAL	$1 \times 10^{-5}$ scc/s OF $\frac{\text{GN}_2}{\text{Q}}$ $\frac{\text{(}_{\text{PSIA}})}{\text{(}_{\text{290}}}$ PSIA)
MATERIAL - CONSTRUCTION	Cres and Al. Al.
SEAT	Kynar
CONNECTIONS - INLET OUTLET	MS-33656-4 or.006m(.25 in) weld tube Ambient dump
MASS :	kg (151bm)
OTHER SIGNIFICANT CHARACTERISTICS	성명 교회의 화장 가는 이번 하는 것 같아. 그는 것

MANUFACTURER Taveo, Inc.	(16)	
PART NUMBER <u>2391237</u>		
PROGRAM		
CONTRACTING AGENCY		
PRIME CONTRACTOR		
STATUS QUALIFIED	Yes	
FLOWN		
AVAILABILITY		
COST/PROCUREMENT INFORMATION		

TYPE			·	· · · · · · · · · · · · · · · · · · ·
DESIGN FLOW MEDIA	Air, N <sub>2</sub>	:		<u> </u>
CRACKING PRESSURE	396		· ( _	575 PSIA)
RESEAT PRESSURE	379	N/cm <sup>2</sup>	( _	550 PSIA)
RATED FLOW AT PRESSURE DIFFERENTIAL		scc/s e		
BURST DIAPHRAGM RUPTURE PRESSURE		N/cm <sup>2</sup>	(_	PSID)
LIFE - BURST DIAPHRAGM		<del>-</del>		TO ZERO N/cm <sup>2</sup> _ TO ZERO PSIA)
VALVE		CYCLES		
PROOF PRESSURE	699.8	_ N/cm <sup>2</sup>	( <u>-</u>	1015 PSIA)
BURST PRESSURE	975.6	. H/cm <sup>2</sup>	(_	1415 PSIA)
OPERATING TEMPERATURE RANGE		°c	(_	<mark>0</mark> F)
LEAKAGE - INTERNAL	10	scc/hr OF		M/cm <sup>2</sup> PSIA)
BURST DIAPHRAGM	-	scc/s OF		
EXTERNAL			(	PSIA)
EXTERNAL		scc/s OF		N/cm² PSIA)
MATERIAL - CONSTRUCTION				
SEAT				
CONNECTIONS -	<del></del>			
OUTLET	.04	_ kg (	.09	l bm)
OTHER SIGNIFICANT CHARACTERISTICS				

MANUFACTURER	Tavco, Inc.	(16)
PART NUMBER _	2396245	<del>보는데, 그렇게</del> 그 아이가, 이번 이 보고싶다. 나는 동안
PROGRAM		
		이는 경험 경고인 대한민이들로 그리지 않는데 한테 얼룩했다.
CONTRACTING AC	BENCY	
PRIME CONTRACT	ror	
0-4-110		B B B B B B B B
STATUS		Yes
	CLE	
LAUNCH VENI	<b>VLE                                   </b>	
AVAILABILITY		· 그렇게 되었다. 이 시마 이 보는 네트리카를 하게 하는데 보고 있는데, 그는 사람들을 잘 통해 모습했다. 
COST/PROCUREME	NT INFORMATION	
		사용 경기 전에 가장 보면 보고 있는데 보고 있다. 그는 사람들은 사용 전에 되었다. 그런데 보고 있는데 보고 있다. 
		사이에 가는 사람들이 되었다. 그는 사람들이 가는 사람들이 되었다. 그렇게 되었다. 
		있는 그 그는 아이지 사고를 살아서 그를 받았다. 그렇지만 살아내고 하나요?

IYPE		<del></del>	<del></del>	·
DESIGN FLOW MEDIA	Air, N <sub>2</sub>			
CRACKING PRESSURE	448	_ N/cm <sup>2</sup>	(	650 PSIA)
RESEAT PRESSURE	393	. N/cm <sup>2</sup>	(	570 PSIA)
RATED FLOW AT PRESSURE DIFFERENTIAL	1.34 x 10	5 scc/s e	N/cm <sup>2</sup> ,	oc
	( 285	SCFM @	PSID,	oF)
BURST DIAPHRAGM RUPTURE PRESSURE		N/cm <sup>2</sup>	(	PSID)
LIFE -				
BURST DIAPHRAGM				
				TO ZERO PSIA)
VALVE		CYCLES		
PROOF PRESSURE	579	N/cm <sup>2</sup>	(	<u>840</u> psia)
BURST PRESSURE	958.3	N/cm <sup>2</sup>	(	1390 PSIA)
OPERATING TEMPERATURE RANGE		°c	(	o <sub>F</sub> )
LEAKAGE -				
INTERNAL	0	scc/hr OF	@	N/cm <sup>2</sup>
				PSIA)
BURST DIAPHRAGM		scc/s OF	_	N/cm <sup>2</sup>
				PSIA)
EXTERNAL		scc/s OF		
			(	PSIA)
MATERIAL -				
CONSTRUCTION				
SEAT				
CONNECTIONS -				
INLET			a e folia de de filoso Para de	
OUTLET				
	0 1/		Λ 22	
MASS	0.14	_ kg (	0.32	om)
OTHER SIGNIFICANT CHARACTERISTICS				

MANUFACTURER	Fairchild Indus	stries (31)
PART NUMBER	56-399	
PROGRAM		X-15
CONTRACTING A	GENCY	USAF
PRIME CONTRAC	TOR	Rockwell International
STATUS		Yes
FLOWN	ICLE	Yes
AVAILABILITY.		Not in production. Available on special orde
COST/PROCUREM	ENT INFORMATION	\$1000
		경기 등에 가는 이 경기에 가는 그들은 경기 되었다. 이 경기는 동안 가는 것이 되었다. 그 전에 경기 등을 받는 것이 되었다. 

ESEAT PRESSURE  ATED FLOW AT PRESSURE DIFFERENTIAL  URST DIAPHRAGM RUPTURE PRESSURE	(	N/cm <sup>2</sup> Scc/s w  SCFM w  N/cm <sup>2</sup> CYCLES AT Z		N/cm <sup>2</sup> , PSID,	(	<sup>o</sup> f) PSID)
RACKING PRESSURE  ESEAT PRESSURE  ATED FLOW AT PRESSURE DIFFERENTIAL  URST DIAPHRAGM RUPTURE PRESSURE	2009.6 1.08 x 10 ( 230	N/cm <sup>2</sup> SCC/S @ SCFM @ N/cm <sup>2</sup> CYCLES AT Z	ERO TO _	N/cm <sup>2</sup> , PSID,	(	4.7 PSIA)  °C °F) PSID)
ATED FLOW AT PRESSURE DIFFERENTIAL  URST DIAPHRAGM RUPTURE PRESSURE	1.08 x 10 ( 230 5000	Scc/s e SCFM e N/cm <sup>2</sup> CYCLES AT Z	ERO TO _	PSID,	( To	°C °F) PSID)
URST DIAPHRAGM RUPTURE PRESSURE	5000	SCFM @ N/cm <sup>2</sup> CYCLES AT Z	ERO TO _	PSID,	( To	<sup>o</sup> f) PSID)
(FE -	5000	. N/cm <sup>2</sup> _CYCLES AT Z (Z	ERO TO _		T0	PSID)
(FE -	5000	_CYCLES AT Z	ERO TO _		то	
	5000	(Z				ZERO N/cm <sup>2</sup>
BURST DIAPHRAGM	5000	(Z				ZERO N/cm2
			FKO IO			7500 00145
VALVE	4147				10	ZERU PSIA)
ROOF PRESSURE	<del></del>	_ N/cm <sup>2</sup>			( 6014	.7 PSIA)
JRST PRESSURE	6215.4	_N/cm <sup>2</sup>			(_9014	.7 PSIA)
PERATING TEMPERATURE RANGE	53to +71.	<b>b</b> c			(-65to	+160° <sub>F</sub> )
AKAGE -						
INTERNAL	300	scc/hr OF _		<b></b>		
BURST DIAPHRAGM		scc/s OF		( -		_ PSIA)
EXTERNAL	299	_scc/s OF		_ • _		_N/cm <sup>2</sup>
				(_		_ PSIA)
TERIAL -	49 499					
	Al Alloy	, Cres				
SEAT	Mylar					
NNECTIONS -	Special					
OUTLET	None					
ss	0.11	_ kg	(	0.25	l bm )	
HER SIGNIFICANT CHARACTERISTICS						
ade in several settings as f	ollows:					
art No. Cracking Pressure 2078.5 N/cm2 (301	<u>.</u>		at Pre	ssur m2 (	e 2914.7	psia)
6-399-01 20/8.3 N/cm <sup>2</sup> (3827 6-399-03 2747 N/cm <sup>2</sup> (3985	psia)	2578	N/cm2	(374	40 psia 65 psia	a)

MANUEACTURER	Tavco, Inc.	(36)		
MANUFACTURER	Taveo, Inc.	<del></del>		
	2204222			
PART NUMBER	2394222			
PROGRAM				
역 등 : 전 : : : : : : : : : : : : : : : : : :				
CONTRACTING A	GENCY			
PRIME CONTRAC	TOR			<del></del>
STATUS				
QUALIFIED.		Yes		
FLOWN				
LAUNCH VEH	ICLE			
AVAILABILITY.				
COST/PROCUREM	ENT INFORMATION			

TYPE			· - <del></del>	
DESIGN FLOW MEDIA	Air, N <sub>2</sub>			
CRACKING PRESSURE	2585	_ N/cm <sup>2</sup>	(	3750 PSIA)
RESEAT PRESSURE	2344	_ N/cm <sup>2</sup>	(	3400 PSIA)
RATED FLOW AT PRESSURE DIFFERENTIAL	$2 \times 10^3$	scc/s e	N/cm <sup>2</sup> ,	°c
	(5	SCFM @	PSID,	°F)
BURST DIAPHRAGM RUPTURE PRESSURE		N/cm <sup>2</sup>	(	PSID)
LIFE -				
BURST DIAPHRAGM		_CYCLES AT ZERO TO		_TO ZERO N/cm <sup>2</sup>
		(ZERO TO		TO ZERO PSIA)
VALVE	<u> </u>	CYCLES		
PROOF PRESSURE		_ N/cm <sup>2</sup>	(	PSIA)
BURST PRESSURE		_N/cm <sup>2</sup>	(	PSIA)
OPERATING TEMPERATURE RANGE		°c	(	o <sub>F</sub> )
LEAKAGE -				
INTERNAL	0	scc/hr OF	@	N/cm <sup>2</sup>
				PSIA)
BURST DIAPHRAGM		scc/s OF		N/cm <sup>2</sup>
				PSIA)
EXTERNAL		_scc/s OF		
			\	PSIA)
MATERIAL -				
CONSTRUCTION				
SEAT				
CONNECTIONS -				
INLET				
OUTLET				
MASS		_ kg (		bm)
회학회사들이 열 보이는 사람이 되었다.				
OTHER SIGNIFICANT CHARACTERISTICS				

MANUFACTURER	Ametek/Calmec	(42)
PART NUMBER _	615	
PROGRAM		Lunar Orbiter
CONTRACTING AG	ENCY	
PRIME CONTRACT	OR	
STATUS OUALIFIED	••••	yes
LAUNCH VEHI	CLE	Atlas Agena
AVAILABILITY	•••••	
COST/PROCUREME	NT INFORMATION	가 있는 것을 보는 것이 하는 것이 되었다. 그는 것이 되었는데, 의학을 가입니다. 사용으로 보고 있는 것이 되었다. 그는 것이 말을 하였다. 그렇게 살을 보고 있다. 이 기를 받는 것이 없다.
		성하는 경우는 경우 이 사람들이 가득하는 것이 되는 것이 없는 것이 없는 것이 없는 것이 없는 것이 없는 것이 없는 것이 없다. 

TYPE			<u> </u>			
DESIGN FLOW MEDIA	N <sub>2</sub>					
CRACKING PRESSURE		N/cm <sup>2</sup>			(	PSIA)
RESEAT PRESSURE		**				PSIA)
RATED FLOW AT PRESSURE DIFFERENTIAL	7.0 x 10					
BURST DIAPHRAGM RUPTURE PRESSURE	<del>,</del>	N/cm <sup>2</sup>			(	PSID)
LIFE - BURST DIAPHRAGM		CYCLES A				ZERO N/cm <sup>2</sup> ZERO PSIA)
VALVE		CYCLES	(ZENO 10.		10	ZENO PS(A)
PROOF PRESSURE	•				(	PSIA)
BURST PRESSURE		_ N/cm <sup>2</sup>			(	PSIA)
OPERATING TEMPERATURE RANGE					( <u>+35</u>	to <sup>85</sup> °F)
LEAKAGE -						
INTERNAL		_scc/hr 0	F			
BURST DIAPHRAGM		_scc/s OF		, , ,		<del></del>
EXTERNAL		_scc/s OF		• _		N/cm <sup>2</sup>
MATERIAL - CONSTRUCTION						
SEAT						
CONNECTIONS -						
OUTLET						
4A\$\$	,31	kg	(	.70	lbm)	
OTHER SIGNIFICANT CHARACTERISTICS						

Filter in inlet

MANUFACTURER _	Ametek/Calmec	(42)
en e		
PART NUMBER _	1039	
PROGRAM.		MOL RCS
CONTRACTING AG	ENCY	
PRIME CONTRACTO	DR	
		[12] - 프로마스 카드 크루스 플토탈 레스트 프로플 및 프
STATUS		
3 A A A A A A A A A A A A A A A A A A A		yes
LAUNCH VEHIC	CLE	
AVAILABILITY	<b>, , , , , , , , , , , , , , , , , , , </b>	
COST / PROCUREMEN	T INFORMATION	마리 전에 보고 등에만 시작했다면서 보고 있는데 하면 사용을 받는다. 그는데 이글 나는데 한 사용에 가는데 보고 있는데 다른데 바로 보고 있다.
COST/PROCUREMEN	( INGUMALION	
(2015년 1월 일 2일 - 1일로) 생활보다 및 11일 및 12일 - 1일로 1일		
. 현광학교 등 설립 등 등 등 등 등 등 등 등 등 등 등 등 등 등 등 등 등		

TYPE	S.S. Burst Disc, Checkout Port	
DESIGN FLOW MEDIA	He, N <sub>2</sub> O <sub>4, MMH</sub>	
CRACKING PRESSURE	N/cm <sup>2</sup> (PSIA)	)
RESEAT PRESSURE	N/cm <sup>2</sup> (PSIA)	)
RATED FLOW AT PRESSURE DIFFERENTIAL	$\frac{6.3 \times 10^4}{\text{scc/s}} = \frac{165}{240} \text{ N/cm}^2, \frac{\text{oc}}{\text{scfm}} = \frac{134}{240} \text{ PSID,} \frac{\text{oc}}{\text{scf}}$	
BURST DIAPHRAGM RUPTURE PRESSURE	N/cm <sup>2</sup> (PSID)	)
VALVE		
PROOF PRESSURE		
BURST PRESSURE	N/cm <sup>2</sup> (PSIA)	)
OPERATING TEMPERATURE RANGE	$-28 \text{ to} / 1.0 \text{ c} $ $(-20 \text{ to} ^{100} \text{F})$	
LEAKAGE - INTERNAL	scc/hr OF@N/cm <sup>2</sup> (PSIA)scc/s OF@N/cm <sup>2</sup>	
	(PSIA)scc/s OF	
MATERIAL - CONSTRUCTION		
CONNECTIONS -		
OUTLET		_
MASS	kg (2.01bm)	

MANUFACTURER	Ametek/Calmec	(42)
PART NUMBER	1049	
PROGRAM		AAP
CONTRACTING AGE	ENCY	
PRIME CONTRACTO	)R	
STATUS		
QUALIFIED		yes
es die Teini		
	CLE	
EAUNON VENTO		
AVAILABILITY		이 한 어때쯤 한다는 학생에 다른 학생들은 학생들은 나를 받는 것
AVAILADILIII		
COST/PROCUREMEN	IT INFORMATION	
		en de la comunicación de la comunidad de la comunicación de la comunicación de la comunicación de la comunicación La comunicación de la comunicación
	1200년 - 기가 중요, 그, 고급학을 17 회교 : 1000년 - 1200년 - 100년	요리를 가는 것이 하는 것이 되었다. 이 전에 가는 것이 되었다. 그 보고 있는 것이 되었다. 
		보는 물론 기업을 보고 있다. 그는 이 그는 전쟁을 하지만 하다고 되고 함께 되었다. 하나 사람이 나는 경기에 들은 물론이 되어 들고를 하다. 이 물론이 나를 보고 있다. 이 물론이 되었다. 그를

S.S. Burst Disc, Checkout Port					
	N <sub>2</sub>				
DESIGN FLOW MEDIA				· ·	
CRACKING PRESSURE		N/cm <sup>2</sup>		(	PS IA)
RESEAT PRESSURE	· <del></del>			•	PSIA)
RATED FLOW AT PRESSURE DIFFERENTIAL	$\frac{4 \times 10^4}{(89}$	scc/s e 241 SCFM e 350	N/cm <sup>2</sup> , PSID, _		°c °F)
BURST DIAPHRAGM RUPTURE PRESSURE		N/cm <sup>2</sup>		(	PSID)
LIFE - BURST DIAPHRAGM		(ZERC TO		TO Z	
PROOF PRESSURE				(	PSIA)
BURST PRESSURE		N/cm <sup>2</sup>			PSIA)
OPERATING TEMPERATURE RANGE	-6.6 to 51	6 °C		( <u>+20</u> t	o <sup>125</sup> °F)
LEAKAGE - INTERNAL		scc/hr OF			
BURST DIAPHRAGM		scc/s OF	e _		. N/cm <sup>2</sup>
EXTERNAL		scc/s OF			N/cm <sup>2</sup>
MATERIAL - CONSTRUCTION					
CONNECTIONS -					
OUTLET	,90	- kg (	2.0	1 bm)	

MANUFACTURER	HTL	Industries,	Inc.	(21)

PART NUMBER 155340-4; 212121

PROGRAM	.00-9
CONTRACTING AGENCY	
PRIME CONTRACTOR	Rockwell Int'l, Rocketdyne Div.
STATUS	
AVAILABILITY	
COST/PROCUREMENT INFORMATION	
ODOT/FROGONEMENT INFORMATION	

TYPE	Poppet	t, 3/8 Tube Si	.ze	
DESIGN FLOW MEDIA	GN <sub>2</sub> ar	nd N <sub>2</sub> O <sub>4</sub>	· · · · · · · · · · · · · · · · · · ·	
RATED FLOW AT DIFFERENTIAL PRESSURE - NOMINAL	(_1.2	scc/c e20 scfm e30 scc/s e	PSID, M/cm <sup>2</sup> ,	°F) °C
CRACKING PRESSURE	11_	N/cm <sup>2</sup>	(1	7PSIA)
RESEAT PRESSURE	10	N/cm <sup>2</sup>	(1	5PSIA)
LIFE		CYCLES		
PROOF PRESSURE		N/cm²	(	PSIA)
SURGE PRESSURE		N/cm <sup>2</sup> WITH PSIA)		OF N/(cm <sup>2</sup> -sec) PSIA/sec)
BURST PRESSURE  OPERATING TEMPERATURE RANGE1.1 t			+30°	PSIA) F 120 °F)
LEAKAGE - INTERNAL	0.8	scc/hr of <u>He</u>	<u>0-216</u> ( <u>0-314</u>	
EXTERNAL	1.0	_scc/s of _GN2		N/cm <sup>2</sup> Both Ports
MATERIAL - CONSTRUCTION				
CONNECTIONS - INLET				
<b>VASS</b>		kg	( 0.25	_ 1 bm)
THER SIGNIFICANT CHARACTERISTICS	ىر 10	Nominal		

MANUFACTURER	HTL Industries, Inc. (21)	
	and the second s	
PART NUMBER	255360-3 255361	

PROGRAM	Viking Orbiter '75			
CONTRACTING AGENCY	NASA/JPL			
PRIME CONTRACTOR	Martin Marietta Corp			
STATUS				
QUALIFIED				
교회 전에 있다. 그 사람들은 그리고 있다. 역사를 열리하는 것 같은 모델을 하는 것 같다.				
AVAILABILITY				
COST/PROCUREMENT INFORMATION				
는 이 클레이트 함께 발표하다 등을 보고 말았다. 하나 보고를 들어 보고 있는 것이 되었다.				

TYPE	Poppet (series), Welded Assembly
DESIGN FLOW MEDIA	He, MMH and N <sub>2</sub> O <sub>4</sub>
RATED FLOW AT DIFFERENTIAL PRESSURE - NOMINAL	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
CRACKING PRESSURE	$5.1 + .6_{\text{N/cm}^2}$ $(7.5 + 1_{\text{PSID}})$
RESEAT PRESSURE	31 N/cm <sup>2</sup> ( <u>745</u> PSIA)
LIFE	10,000 CYCLES
PROOF PRESSURE	423 N/cm <sup>2</sup> ( <u>614</u> PSIA)
SURGE PRESSURE	ZERO TO $286$ N/cm <sup>2</sup> WITH MAX RISE RATE OF $31,026$ N/(cm <sup>2</sup> -1) (415 PSIA) (45,000 PSIA/sec
BURST PRESSURE  OPERATING TEMPERATURE RANGE	1112 N/cm <sup>2</sup> (1614 PSIA) -6.6 to +51.6 °C (+125 °F)
	10 <sup>-6</sup> scc/hr of He 285 N/cm <sup>2</sup> (14.5 to 414 PSIA)  X 10 <sup>-7</sup> scc/s of He 285 N/cm <sup>2</sup> (414 PSIA)
MATERIAL - CONSTRUCTION	Cres and Teflon
CONNECTIONS - INLET	
MASS	32kg (1bm)
OTHER SIGNIFICANT CHARACTERISTICS Series Filters	
	18 Micron ABS

ATTITUDE	CONTROL.	PROPULSION	COMPONENT	DATA	SHEET
4.2.5 VALVE.	CHECK				

MANUFACTURER Tavco, Inc.	(16)
PART NUMBER 2324212	
	그 배당하다 하는 회에는 사람들이 그 밖에게 하는 것들까?
	요즘 보다는 이 사이가 가는 이름을 입으셨다는데
	용에 그를 내용한 이 수로 분들하다는 기민들이 하는 수 있는데?
PROGRAM	
IROUNAMIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	
CONTRACTING AGENCY	
PRIME CONTRACTOR	
	일을 하게 된다. 그는 그들은 이 호텔 등에 되었다면 하는 목표를 하는데
STATUS	
QUALIFIED	Yes
FLOWN	
LAUNCH VEHICLE	
AVAILABILITY	
COST/PROCUREMENT INFORMATION	
그 이 됐다는 하시 하면 되었다.	
[편집 이 동안 되는 것이 얼마면 되는 것 같아요] 그 사람이 되었다.	이 사고들이 아무리 그는 아버지는 아는 아는 아들은 얼마 아까지 하는 것들은 사람들이 하는 사람들이 나는 사람들이 들었다. 사람이 들었다는 수학자

TYPE						
DESIGN FLOW MEDIA	Air,	N <sub>2</sub>				
RATED FLOW AT DIFFERENTIAL PRESSURE -	0 / =	103		•		
NOMINAL	7.4 X	_ <del>8c</del> c/c	)	N/cm²,		_°c
			·			
EMERGENCY						
	(	_SCFM &	)	PSID, _		– <sup>vF)</sup>
CRACKING PRESSURE	Charles and the same	_N/cm <sup>2</sup>		(		PSIA)
RESEAT PRESSURE		_ N/cm <sup>2</sup>		(_		_ PSIA)
LIFE		_ CYCLES				
PROOF PRESSURE	3113	_N/cm <sup>2</sup>		(	4515	PSIA)
SURGE PRESSURE						N/(cm <sup>2</sup> -se PSIA/sec)
BURST PRESSURE	5181	_ N/cm <sup>2</sup>		.i	7515	_PSIA)
PERATING TEMPERATURE RANGE		_°C		( _		_°F)
EAKAGE -						
		scc/hr	of	(a)	N/	cm <sup>2</sup>
					PS	
EXTERNAL	0	_scc/s o	f	@	N/	cm <sup>2</sup>
				(	PS	IA)
ATERIAL -						
CONSTRUCTION						
SEAT						
ONNECTIONS -						
INLET	•					
OUTLET						
ASS	0.480	kg		( <u>1</u>	.06 16	<b>m)</b>
THED CLONIE ICANT CHADACTEDICTICS			and the first of the control of the			

MANUFACTURER	Marotta	Scientific	Controls		
			(53)		
MODEL NO.	CVM504				
PART NUMBER	801602				

PRUGRAM	
CONTRACTING AGENCY	NASA
PRIME CONTRACTOR	
	보통하게 되었다. 이번, 사람이 이번 명은 보고 하고, 이 이번 명은 하는 사람들이 사람들은 사람들이 하는 사람들이 들었다.
STATUS	yes
QUALIFIED	
FLOWN	yes
LAUNCH VEHICLE	
	H. H
AVAILABILITY	
COST/PROCUREMENT INFORMATION	
	경기 경기 기계 기계 기계 등 분류 분들이 되는 것이 되지 않는 것이 되었다. 현재 경기 기계
사람들은 기사들이 있는 것 같습니다. (1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	
아이 경우는 아이지가 얼마가 나는 그릇 것이 생각하다.	

TYPE	.0063 m (.25 in),	Free flow check
DESIGN FLOW MEDIA		angangan arang ang ang ang ang ang ang ang ang ang
RATED FLOW AT DIFFERENTIAL PRESSURE -		$(C_d = .6)$ , Flow factor $F = .6$
NOMINAL		N/cm <sup>2</sup> ,°C
<u> Salabana</u> sa kabupatèn K	SCFM •	PSID,
EMERGENCY	scc/s @	N/cm <sup>2</sup> , °C PSID, °F)
	\SUFM #	PSIG
CRACKING PRESSURE	N/cm <sup>2</sup>	(5-8 事業()
RESEAT PRESSURE	N/cm <sup>2</sup>	(PSIA)
LIFE	CYCLES	
PROOF PRESSURE	6205_N/cm <sup>2</sup>	( 9000 PSIA)
SURGE PRESSURE	ZERO TO N/cm <sup>2</sup> WI	ITH MAX RISE RATE OFN/(cm <sup>2</sup> -sec) (PSIA/sec)
SURST PRESSURE	16,547 N/cm <sup>2</sup>	( 24,000 PSIA)
PERATING TEMPERATURE RANGE	-53 to 71.1	$(\frac{-65 \text{ to}}{160})$
EAKAGE -		
INTERNAL	0 scc/hr of	$0-4136_{\rm N/cm}^2$
		( 0-6000 PSIA)
EXTERNAL	0 scc/s of	
		(PSIA)
ATERIAL - CONSTRUCTION	ST. STL.	
SEAT		
ONNECTIONS -		
INLET		
OUTLET		
ASS		( 1 bm)
	kg	
THER SIGNIFICANT CHARACTERISTICS		연연적인 및 고등학교 및 및 인연시인 등 기기

MANU	FACTURER	HTL Indus	tries. Inc	(21)
				•
PART	NUMBER _	212870-2	212871	

PROGRAM	Mainer 09
CONTRACTING AGENCY	
PRIME CONTRACTOR	TRW Systems
STATUS	
QUALIFIED	yes, by TRW
FLOWN	
LAUNCH VEHICLE	Atlas Agena
AVAILABILITY	
nada (h. 1905). Marani haran kalendaran 1906 an 1964 a di	
COST/PROCUREMENT INFORMATION	
도 등에 있는 경험하는 경험 등의 등을 통해 되었다. 그는 일이 나는 경영에 되는 경영하는 등에 말했습니다.	

TYPE	Poppet	(Dual Check)	; 1/4 Tube	Size; Welded Assembly
DESIGN FLOW MEDIA	GN <sub>2</sub> , M	MH and N <sub>2</sub> O <sub>4</sub>		Assembly
DESIGN FLOW MEDIA	<u></u>	<u> </u>		
RATED FLOW AT DIFFERENTIAL PRESSURE -	•			
NOMINAL		scc/c @		
		SCFM @		
EMERGENCY		_ scc/s @		
	(	SCFM @	PSID,	
CRACKING PRESSURE	9.6	_N/cm <sup>2</sup> Max	(14	PSIA)
RESEAT PRESSURE	10	_N/cm <sup>2</sup> Min	(15	PSIA)
LIFE	* <u>*                                  </u>	_ CYCLES		
PROOF PRESSURE	406	_N/cm <sup>2</sup>	(589	PSIA)
SURGE PRESSURE	ZERO TO _	N/cm <sup>2</sup> WITH	I MAX RISE RATE (	)FN/(cm <sup>2</sup> -sec)
	(.	PSIA)	( -	PSIA/sec)
BURST PRESSURE	485	_ N(cm <sup>2</sup> )	( 704	PSIA)
OPERATING TEMPERATURE RANGE	_373	_ °C	(	o <sub>F</sub> )
LEAKAGE -				
INTERNAL	0.8	scc/hr of GN2	<u>0-247</u>	N/cm <sup>2</sup> outlet
		<b>-7</b>	( 0-359	PSIA)
EXTERNAL	1 X 10	scc/s of He		
			( 0-589	PSIA)
MATERIAL - CONSTRUCTION				
SEAT				
CONNECTIONS -				
INLET				
OUTLET				
	97		(_0.60	
4ASS	. 21	kg	(	. 1 bm)
OTHER SIGNIFICANT CHARACTERISTICS				
Filters, Nominal		5 µ		
Filters, Absolute				

PART NUMBER 255510-2	255511		
	<u>M</u> ariner	A Communication	

CONTRACTING AGENCY	
PRIME CONTRACTOR	Martin Marietta Corp
STATUS	
QUALIFIED	yes, by HTL Industries
FLOWN	
LAUNCH VEHICLE	Atlas Agena
AVAILABILITY	연변 본 하루 토토 토토 경험 하는 그는 유민 씨는 그는 화물 수
COST/PROCUREMENT INFORMATION	



TYPE	Poppet, 3/8 Tube	Size, Welded Assembly
DESIGN FLOW MEDIA	GN <sub>2</sub> , MMH, N <sub>2</sub> O <sub>4</sub>	
RATED FLOW AT DIFFERENTIAL PRESSURE -		
NOMINAL	scc/c e	
	(SCFM @	PSID,OF)
EMERGENCY	scc/s @	
	(SCFM @	PSID,OF)
CRACKING PRESSURE	11±.6 N/cm <sup>2</sup>	( <u>16±1</u> PSIA)
RESEAT PRESSURE	N/cm <sup>2</sup>	(PSIA)
LIFE	CYCLES	
PROOF PRESSURE	402 N/cm <sup>2</sup>	(
SURGE PRESSURE		TH MAX RISE RATE OFN/(cm <sup>2</sup> -sec
BURST PRESSURE	$\frac{533}{-37}$ M(cm <sup>2</sup> )	( 774 PSIA)
OPERATING TEMPERATURE RANGE		( <u>+125</u> ° <sub>F</sub> )
LEAKAGE -		9.99-
INTERNAL	0.8 scc/hr of GN	2 w257 N/cm <sup>2</sup>
		(145-37/(PSIA)
EXTERNAL	/	e 271 N/cm²
		( <u>394</u> PSIA)
MATERIAL - CONSTRUCTION	Cres and Teflon	
SEAT		
CONNECTIONS -		[발생] 회사 전문 시간 호텔 전문 전송 전 [참조] 기교 기교 기교 기교 기교 기교
INLET		
OUTLET		
	3kg	( <u>0.8</u> 1bm)
THEO CLONIE LOANT CHADACTEDISTICS		

	MANUFACTURER	Tavco, Inc.	(16)			
	PART NÜMBER _	232129				
						•
					•	
	PROGRAM					
	PROURAM	***************************************				
asar.»	CONTRACTING AG	ENCY			· · · · · · · · · · · · · · · · · · ·	
			Philco For	a di kacamatan 19		
	PRIME CONTRACT	OR	THITCO FOI			
	STATUS	e de la proposition de la Company de la La company de la Company d				
	QUALIFIED		Yes			
	FLOWN					
	LAUNCH VEHI	CLE				
	AVAILABILITY					
	COST/PROCUREME	NT INFORMATION				

TYPE	Solenoid shut of	<u>t</u>	<del></del>
DESIGN FLOW MEDIA	Air, N <sub>2</sub>		
RATED FLOW AT DIFFERENTIAL PRESSURE -	,	2	04 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
NOMINAL	scc/c e	N/cm²,	
	(scfm e	PS ID,	— <sup>°F)</sup>
EMERGENCY	4 X 10 scc/s @	N/cm²,	_ ~c
	( <u>1</u> scfm •	PSID,	<sup>o</sup> f)
CRACKING PRESSURE	N/cm <sup>2</sup>	(	PSIA)
RESEAT PRESSURE	N/cm²	(	PSIA)
LIFE	CYCLES		
PROOF PRESSURE	3457 N/cm <sup>2</sup>	(5015_	PSIA)
SURGE PRESSURE	ZERO TO N/cm <sup>2</sup> WIT	TH MAX RISE RATE OF	N/(cm <sup>2</sup> -sec
	(PSIA)		
BURST PRESSURE	4629 N(cm <sup>2</sup> )	( 6715	PSIA)
OPERATING TEMPERATURE RANGE	-53 to +135	( <u>-65 to</u>	275 <sub>F)</sub>
LEAKAGE +			
INTERNAL	scc/hr of	a #/	/cm <sup>2</sup>
		( P:	
EXTERNAL	016 scc/s of	N.	/cm <sup>2</sup>
		( P:	
MATERIAL -			
CONSTRUCTION			
SEAT			
CONNECTIONS -			
INLET			
OUTLET			
	,594kg	(_1.31_1	
<b>ASS</b>	<b>.</b> 594kg	\ <u></u> !	OM )
OTHER SIGNIFICANT CHARACTERISTICS			

MANUFACTURER	Fairchild Ind Stratos Div.	ustries (31)	• · · · · · · · · · · · · · · · · · · ·		
PART NUMBER _	601000		•		
PROGRAM		<b>O</b> AO			
CONTRACTING AG	ENCY	NASA			
PRIME CONTRACTO	OR	G.A.C.			
STATUS					
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Yes			
FLOWN		Yes			
LAUNCH VEHIC	CLE		<del></del>		
ÁVÁTLÁBILITY		Not in pro	duction.	Available	on special
COST / PROCUPENE	T INFORMATION	\$4000-6000			

### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.6 REGULATOR, GAS PRESSURE

TYPE	Single, direct acting	· · · · · · · · · · · · · · · · · · ·
DESIGN FLOW MEDIA	GN <sub>2</sub>	
INLET PRESSURE RANGE	$\frac{44.6}{2248}$ $\frac{1}{\text{N/cm}^2}$	( 64.7-3260.7 PSIA)
REGULATED OUTLET PRESSURE		SCC/S FLOW RATE RANGE
FLOW RATE RANGE	47 scc/s @ 44.6 ( 0.1 scfm @ 64.7	
OUTLET LOCKUP PRESSURE		(
DYNAMIC PERFORMANCE -		
MAX. INLET PRESSURE CHANGE RATE	N/cm <sup>2</sup> /Min	( PSIA/Min)
MAX. REGULATED PRESSURE OSCILLATION .	± N/cm <sup>2</sup> OVER	I/cm2 INLET PRESSURE PANGE
	(± PSIA OVERF	SIA INLET PRESSURE RANGE)
LIFE	10,000 CYCLES	
PRESSURES, INLET -		
PROOF	3371_N/cm <sup>2</sup>	( <u>4890</u> PSIA)
BURST	5612N/cm <sup>2</sup>	( 8140 PSIA)
PRESSURES, OUTLET -		
PROOF	17.7N/cm <sup>2</sup>	( <u>25.7</u> PSIA)
BURST	$\frac{22.5}{765.5}$	( 32.7 PSIA) +150
OPERATING TEMPERATURE RANGE	-34 to °c	(-30 to +150 (-30 to -9F)
LEAKAGE -		
INTERNAL	10scc/hr 0F	N/cm <sup>2</sup>
		( PSIA)
EXTERNAL	0005 scc/s OF	N/cm <sup>2</sup>
		(PSIA)
MATERIAL -		
CONSTRUCTION	17-4 PH, 300 Series Cr	es
SEAT		
CONNECTION -		
INLET	_MS_33514-4	
OUTLET	MS 33514-4	The state of the s
MASS	0_4kg	( <u>0.9</u> 1bm)
OTHER SIGNIFICANT CHARACTERISTICS	O vent excessive outlet	nresure

ATTIT	UDE CON	TROL	PROPU	LSION	COMPO	NENT	DATA	SHEET
4.2.6	REGULATOR,	GAS PR	ESSURE		•			

Tavco, Inc.

(16)

	PART NUMBER	2346340		<del></del>	
)					
	PROGRAM				
	CONTRACTING A	GENCY			
	PRIME CUNIKAC	TOR			
	STATUS				
	그리는 그림을 하는 그를 모르는 것		<u>Yes</u>		
		ICLE			
	AVAILABILITY				
	AVAILADILIIT				
	COST/PROCUREME	ENT INFORMATION			
Λ					
<i>)</i>					

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.6 REGULATOR, GAS PRESSURE

TYPE		· ·
DESIGN FLOW MEDIA	Air, N <sub>2</sub>	
INLET PRESSURE RANGE		( 140-665 PSIA)
REGULATED OUTLET PRESSURE		N/cm <sup>2</sup> @scc/s FLOW RATE RAI
FLOW RATE RANGE		
FLOW RAIE RANGE		PSIA INLET PRESSURE RANGE)
OUTLET LOCKUP PRESSURE		
DYNAMIC PERFORMANCE -		
MAX. INLET PRESSURE CHANGE RATE	N/cm <sup>2</sup> /Min	( PSIA/Min)
MAX. REGULATED PRESSURE OSCILLATION .	± N/cm <sup>2</sup> OVER	N/cm2 INLET PRESSURE RANGE
	(± PSIA OVER	PSIA INLET PRESSURE RANGE)
IFE	CYCLES	
RESSURES, INLET -		
PROOF	N/cm <sup>2</sup>	(PSIA)
BURST	N/cm <sup>2</sup>	( PSIA)
RESSURES, OUTLET -		
PROOF	N/cm <sup>2</sup>	( PSIA)
BURST	N/cm <sup>2</sup>	(PSIA)
PERATING TEMPERATURE RANGE	°c	(°F)
AKAGE -	.025 1b/min	
INTERNAL	scc/hr OF	N/cm <sup>2</sup>
		(PSIA)
EXTERNAL	Oscc/s OF	
		PS(A)
TERIAL -		
CONSTRUCTION		
SEAT		
NNECTION -		
INLET		
OUTLET		
ss	kg	( <u>1.3</u> lbm)
HER SIGNIFICANT CHARACTERISTICS		

ATTITUDE	CONTROL	PROPULSION	COMPONENT	DATA	SHEET
4.2.6 REGU	LATOR, GAS PR	RESSURE			

MANUFACTURER Sterer Engineering

(16)

PART NUMBER	25210-1	<del>요즘 사람들이 되는 사람들이 하는 사람들이 되었다. 이 사람이 되는 사람이 되었다. 이 사람들이 되었다. 하는 사람들이 되었다. 그 사람들이 되었다면 하는 사람들이 되었다면 하는 사람들이 되었다면 하는 사람들이 되었다면 되었다면 하는 사람들이 되었다면 되었다면 하는 사람들이 되었다면 되었다면 되었다면 되었다면 되었다면 되었다면 되었다면 되었다면</del>
	<b>电影图像 电影</b>	
ROGRAM		Mariner Mars '71
	ing the major to be a first of a con- position of the contract of the con-	
CONTRACTING AGEN	CY	NASA
PRIME CONTRACTOR		아이에서 아마를 잃었다. 이 아마이에 이렇게 하는데 뭐
KIME CONTINACION		
71710		사는 마이트 보는 방향들도 있는 어떤 사람들은 생각했다.
TATUS		
QUALIFIED		
FLOWN		Yes
LAUNCH VEHICLE	E	
		그 항문 호텔 전기 속로하고 문제 모여 한 모양을 다 했다
VALLABILLTV		
VAILABILITY		사람들이 그는 어느 아느 생각 한번째에 어떤 사람들이 다음을 가게 하는 하는 사람들이 수
VAILABILITY		

TYPE	CN			
DESIGN FLOW MEDIA	GN <sub>2</sub>	· · · · · · · · · · · · · · · · · · ·		
INLET PRESSURE RANGE	0-2078	N/cm <sup>2</sup>	( _0-3015	PSIA)
REGULATED OUTLET PRESSURE				scc/s FLOW RATE RANG
FLOW RATE RANGE				
FLOW RATE NAME				ILET PRESSURE RANGE)
OUTLET LOCKUP PRESSURE			(	
DYNAMIC PERFORMANCE -				
MAX. INLET PRESSURE CHANGE RATE		_ N/cm <sup>2</sup> /Min	(	PSIA/Min)
MAX. REGULATED PRESSURE OSCILLATION .				
	(±	PSIA OVER	PSIA INLET F	RESSURE RANGE)
LIFE		CYCLES		
PRESSURES, INLET -				
PROOF	3113	N/cm <sup>2</sup>	(_4515	_ PSIA)
BURST		N/cm <sup>2</sup>	(	PSIA)
PRESSURES, OUTLET -				
PR00F		_ N/cm <sup>2</sup>	(	_ PSIA)
BURST		_ N/cm <sup>2</sup>	(	_ PS IA)
DPERATING TEMPERATURE RANGE		_°c	(	_ °F)
LEAKAGE -				
INTERNAL		scc/hr 0F	<u> </u>	N/cm <sup>2</sup>
			(	PSIA)
EXTERNAL	0	_ scc/s 0F	@	N/cm <sup>2</sup>
			( <u></u>	PSIA)
MATERIAL				
CONSTRUCTION				
SEAT				
ONNECTION -				
INLET				
OUTLET	e gamen Tanan ang ang ang ang ang ang ang ang ang	بالروسان مرادر التركيات التراسات الماريات الماريات		
ASS	0.279	kg	( 0.617	1 bm)
			\	
THER SIGNIFICANT CHARACTERISTICS				

ATTITUDE	CONTROL	PROPULSION	COMPONENT DATA	SHEET
4.2.6 REGUL	ATOR, GAS PR	RESSURE		

MANUFACTURER _	Sterer Engir	neering (16)
PART NUMBER	46240	
		보는 하는 그를 보고 있는 것이라고 보고 있는 것이 없는 것이 되었다. 그런 그런 보고 있는 것이다. 그런 보고 있는 것이라고 있는 것이 되는 것으로 되는 것이라고 있는 것이다.
PROGRAM		VO '75
CONTRACTING AGE	ENCY	NASA/JPL
PRIME CONTRACTO	)R	Martin Marietta
STATUS		
		<u>Yes</u> 1975
LAUNCH VEHIC	· <b></b>	
AVAILABILITY		
COST/PROCUREMEN	T INFORMATION	

TYPE		
DESIGN FLOW MEDIA	GN <sub>2</sub>	
NLET PRESSURE RANGE	355 - 3113 N/cm <sup>2</sup>	( 515-4515 PSIA)
REGULATED OUTLET PRESSURE	17 ± 1.0 N/cm	n <sup>2</sup> @ 0-3068 scc/s FLOW RATE RANGE
	(25 ± 1.5 PSI	G @ 0-6.5 scf/m FLOW RATE RANGE)
FLOW RATE RANGE	$0-3.0\times10^{3}$ scc/s @ $355-311$	3 N/cm2 INLET PRESSURE RANGE 5 PSIA INLET PRESSURE RANGE)
OUTLET LOCKUP PRESSURE	N/cm-	(PSIA)
DYNAMIC PERFORMANCE -	600 1	1000
MAX. INLET PRESSURE CHANGE RATE	689.4 N/cm <sup>2</sup> /Min	
MAX. REGULATED PRESSURE OSCILLATION .	$\pm 2$ N/cm <sup>2</sup> OVER $\pm$	
	$\frac{\pm 2}{(\pm 3)} \qquad \text{PSIA OVER} \qquad \frac{10^6}{*355}$	PSIA INLET PRESSURE RANGE) 3113 N/cm (515-4515 psia)
LIFE	CYCLES	
PRESSURES. INLET -		
PROOF	4664 N/cm <sup>2</sup>	( <u>6765</u> PSIA)
BURST	6215 N/cm <sup>2</sup>	( 9015 PSIA)
PRESSURES, OUTLET -		
PROOF	72.3 N/cm <sup>2</sup>	( 105 PSIA)
BURST	93.0 N/cm <sup>2</sup>	( 135 PSIA)
OPERATING TEMPERATURE RANGE	0 to 71.1 <sub>c</sub>	(32 to 160 of)
LEAKAGE -		
INTERNAL	1.0 scc/hr 0F GN2	<u> </u>
		(_4015 PSIA)
EXTERNAL	1.39x10 scc/s OF GN2	@2768 N/cm <sup>2</sup>
		(PSIA)
MATERIAL -		
CONSTRUCTION	347 CRES, 7075 T73 A1	
SEAT	Vespal	
CONNECTION -		
INLET	.25 O.D. 347 CRES tub	ing
OUTLET	.312 O.D. 347 CRES tu	
	0.20	(0.88 ) bm)
MASS	kg	, <b>, , , , , , , , , , , , , , , , , , </b>
OTHER SIGNIFICANT CHARACTERISTICS		

ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.6 REGULATOR, GAS PRESSURE

MANUFACTURER	Marotta	Scientific	Controls	
MODEL NO.	RV74A	and the second s	(53, 54)	
PART NUMBER .	226154			

PROGRAM	Apollo
CONTRACTING AGENCY	NASA
PRIME CONTRACTOR	Aerojet
STATUS	
QUALIFIED	Yes
FLOWNLAUNCH VEHICLE	
AVAILABILITY	
COST/PROCUREMENT INFORMATION	

TYPE		tor, Relie	ef		
DESIGN FLOW MEDIA	Air, N	2			
INLET PRESSURE RANGE	551 - 3	3102 N/cm <sup>2</sup>		( 800 -	4500 PSIA)
REGULATED OUTLET PRESSURE	* 24	ţo 434	N/cm <sup>2</sup>		scc/s FLOW RATE RANGE
	(35	±o 630	PSIG	0	scf/m FLOW RATE RANGE)
FLOW RATE RANGE				and the second	INLET PRESSURE RANGE
Flow Factor=.12					INLET PRESSURE RANGE)
OUTLET LOCKUP PRESSURE		N/cm <sup>2</sup>		(	
DYNAMIC PERFORMANCE -					
MAX. INLET PRESSURE CHANGE RATE		_ N/cm <sup>2</sup> /Min		(	_ PSIA/Min)
MAX. REGULATED PRESSURE OSCILLATION .	<u>±</u>	_ N/cm <sup>2</sup> OVER _		N/cm2 INLE	T PRESSURE RANGE
	( <u>±</u>	_ PSIA OVER _	<del></del>	PSIA INLET	PRESSURE RANGE)
LIFE		_ CYCLES			
PRESSURES, INLET -					
PR00F	4664	N/cm <sup>2</sup>		( 6765	PSIA)
BURST				(_11265	PSIA)
PRESSURES, OUTLET -					
PROOF		_ N/cm <sup>2</sup>		(	PSIA)
BURST	<del></del>	_N/cm <sup>2</sup>		(	PS IA)
OPERATING TEMPERATURE RANGE	$\cdot 17$ to $^{\prime 1}$	_oc		( 0 to 1	<u>60</u> ∘ <sub>F)</sub>
LEAKAGE -					
INTERNAL		_scc/hr OF		ð	N/cm <sup>2</sup>
				(	PSIA)
EXTERNAL		_ scc/s OF		@	N/cm <sup>2</sup>
				(	PSIA)
MATERIAL -					
CONSTRUCTION					
SEAT			<del></del>		
CONNECTION -					
INLET					
OUTLET	-				
4ASS	9.07	kg		( 2.0	O1 bm)
OTHER SIGNIFICANT CHARACTERISTICS *Range determined by **Flow determined by	1-4 spr flow fa	ing select	tion let pr	essure	

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.6 REGULATOR, GAS PRESSURE

MANUFACTURER	Stratos Div.	(31)			
PART NUMBER	617000				
			e di Maria di Salah		
PROGRAM	• • • • • • • • • • • • • • •	OAO			
CONTRACTING AC	ENCY	NASA			
LUNIKACIING AG	ENUT	MADA			
PRIME CONTRACT	OR	G.A.C.			
KUIL OOK IKAOT	<b>V</b>				
STATUS					
		Yes			
하고 구멍하다 네트를 받는		Yes			
	CLE				
LAUNSH TEN					
AVAII ARII ITY		Not in pr	oduction. Av	vailable on s	special orde
COST/PROCUREME	NT INFORMATION				
		y to <del>minimus safety a sept</del> ember a september a septem			
		and the second s	and the contract of the contra	the state of the s	

TYPE	Single, Pilot lo	aded
DESIGN FLOW MEDIA	GN <sub>2</sub>	
INLET PRESSURE RANGE	113-2699 N/cm <sup>2</sup>	( 165-3915 PSIA)
REGULATED OUTLET PRESSURE	26 ± 2	_ N/cm <sup>2</sup> @ 2x10 <sup>3</sup> scc/s FLOW RATE RANGE
	( <u>38</u> ± <u>3</u>	PSIG 5 scf/m FLOW RATE RANGE)
FLOW RATE RANGE	472-2360 scc/s @	113 N/cm2 INLET PRESSURE RANGE
	( 1-5 SCFM @	PSIA INLET PRESSURE RANGE)
OUTLET LOCKUP PRESSURE	40.4 N/cm <sup>2</sup>	( 58.7 PSIA)
DYNAMIC PERFORMANCE -		
MAX. INLET PRESSURE CHANGE RATE	N/cm <sup>2</sup> /Min	( PSIA/Min)
MAX. REGULATED PRESSURE OSCILLATION .	+ N/cm <sup>2</sup> OVER _	N/cm2 INLET PRESSURE RANGE
	(± PSIA OVER	PSIA INLET PRESSURE RANGE)
LIFE	CYCLES	
PRESSURES, INLET -		
PROOF	3371 N/cm <sup>2</sup>	( 4890 PSIA)
BURST		( <u>8140</u> PSIA)
PRESSURES, OUTLET -		
PROOF	82.7 N/cm <sup>2</sup>	(120 PSIA)
BURST	$\frac{13.1}{+65.5}$ N/cm <sup>2</sup>	( 190 PSIA)
OPERATING TEMPERATURE RANGE	-34 to +05.5	(-30 to +150 of)
LEAKAGE -		
INTERNAL	10 scc/hr OF	N/cm <sup>2</sup>
		( PSIA)
EXTERNAL	.0005 scc/s OF	N/cm <sup>2</sup>
		(PSIA)
MATERIAL -		
CONSTRUCTION	17-4 PH, 300 Ser	ies Cres
SEAT	Kynar, Polyimide	
CONNECTION -		어린 생활으로 살아 하면 되면 말다.
INLET	MS33514-4	
OUTLET	MS33514-4	
MASS	.54 kg	(1.2) [bm]
OTHER SIGNIFICANT CHARACTERISTICS	Incorporates relie outlet pressure.	ef valve to vent excess

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.6 REGULATOR, GAS PRESSURE

MANUFACTURER	Sterer	Engineering	(43)	
•				
PART NUMBER .	34810			
		•		
A Committee of the Comm				
5566544		P۲	coject 169	
PROGRAM				and the second s
		•••	7 4 73	
CONTRACTING AC	BENCY	<u>US</u>	SAF	
PRIME CONTRACT	го <b>г</b> .	TI T	RW Systems	
				마시계 그림 등을 제하는 병원되다.
STATUS				
		у	es.	
QUALIFIED				
FLOWN				
LAUNCH VEHI	CLE			
Marian Postaria				
AVAILABILITY				원교 경기가 되는 그들은 가장 있는 모양이
MINIBADIBILITY.				
				化工作系统 法不断的 化基层线
COST/PROCUREME	NT INFORM	AIION		

The contract of the contract	TYPE	Series redundant	valving elements
REGULATED OUTLET PRESSURE   34	DESIGN FLOW MEDIA	Nitrogen	
SO	INLET PRESSURE RANGE	N/cm <sup>2</sup>	( ?SIA)
SO	REGULATED OUTLET PRESSURE	34 ±	N/cm2 &scc/s FLOW RATE RANGE
Carried Script   Sc		( 50 ±	PSIA e scf/m FLOW RATE RANGE)
Carried Script   Sc	FLOW RATE RANGE	1.1 x 10 3 scc/s @	N/cm2 INLET PRESSURE RANGE
DYNAMIC PERFORMANCE -  MAX. INLET PRESSURE CHANGE RATE			
MAX. INLET PRESSURE CHANGE RATE         M/cm²/Min   (	OUTLET LOCKUP PRESSURE	36.1 N/cm <sup>2</sup>	(
MAX. REGULATED PRESSURE OSCILLATION	DYNAMIC PERFORMANCE -		
(± PSIA OVER	MAX. INLET PRESSURE CHANGE RATE		
CYCLES   PRESSURES, INLET -	MAX. REGULATED PRESSURE OSCILLATION .	<u>±</u> N/cm <sup>2</sup> OVER	N/cm2 INLET PRESSURE RANGE
PRESSURES, INLET -  PROOF		(± PSIA OVER	PSIA INLET PRESSURE RANGE)
PROOF	LIFE	CYCLES	
PROOF	PRESSURES INLET -		
BURST	· ·	113-2768 N/cm <sup>2</sup>	( 165-4015, PSIA)
PRESSURES, OUTLET -  PROOF			
PROOF			
BURST		20-62 N/cm <sup>2</sup>	( 30-90 PSIA)
DEPERATURE RANGE			
INTERNAL   1.0   scc/hr OF   e   M/cm²		-45 to 93.3	(-50 to <sup>20</sup> 0 <sub>st</sub> )
INTERNAL	OPERATING TEMPERATURE RANGE	<del>-45 co -</del> c	( <del>-30 co -</del> -F)
CONSTRUCTION -   INLET -   COUTLET -   C	LEAKAGE -	1 0	
SCC/S OF   W   N/cm <sup>2</sup>	INTERNAL	scc/hr OF	
CONSTRUCTION   CONNECTION   C			
AATERIAL -  CONSTRUCTION -  SEAT	EXTERNAL	scc/s OF	
CONSTRUCTION			(PSIA)
SEAT	MATERIAL -		
ONNECTION - INLET OUTLET	CONSTRUCTION		
OUTLET	SEAT		
OUTLET	CONNECTION -		
lASSkg (1bm)	INLET		
[10] 김 사이에 발하하는 것이 그는 그들은 사람이 사용하다고 있다고 있다는 것이 바쁜 것이 되었다.	OUTLET		
[10] 김 사이에 발하하는 것이 그는 그들은 사람이 사용하다고 있다고 있다는 것이 바쁜 것이 되었다.	4ASS	ka	( <u></u>

	ATTITUDE	CONTROL	PROPULSION RESSURE	COMPONENT	DATA	SHEET
الريا	4.2.6 REGUI	LATOR, GAS PR	RESSURE			

			; ;			
MANUFACTURER	Sterer Engineer	ing	(16)			
PART NUMBER _	33120-1					
PROGRAM		ERTS			<del></del>	
CONTRACTING AG	BENCY	NASA	V Goddard			
PRIME CONTRACT	OR	TRW/	'GE			
STATUS						
QUALIFIED		Yes				
		Yes	<del></del>			
LAUNCH VEHI	CLE	<del></del>				
AVAILABILITY						
COST/PROCUREME	NT INFORMATION					

TYPE					<del></del>
DESIGN FLOW MEDIA	Freon 1	_4		·	<del></del>
INLET PRESSURE RANGE		N/cm <sup>2</sup>	(	2015	PSIA)
REGULATED OUTLET PRESSURE	37-41	<u> </u>	N/cm <sup>2</sup> @	scc/s	S FLOW RATE RANG
	(55-60	±	PSIG.	scf/i	n FLOW RATE RANG
FLOW RATE RANGE	$\frac{2}{-3.9x1}$	.0 <sub>scc/s @</sub>		N/cm2 INLET	PRESSURE RANGE
	(1-8.3)	SCFM @		PSIA INLET P	RESSURE RANGE)
OUTLET LOCKUP PRESSURE		_ N/cm <sup>2</sup>	(	PSIA)	
DYNAMIC PERFORMANCE -					
MAX. INLET PRESSURE CHANGE RATE					
MAX. REGULATED PRESSURE OSCILLATION .		_N/cm <sup>2</sup> OVER _			
	( <u>±</u>	PSIA OVER	PSIA	INLET PRESSU	RE RANGE)
LIFE		CYCLES			
PRESSURES, INLET -					
PROOF	2078	_ N/cm <sup>2</sup>	(	3015 PSI	A)
BURST	5526	_N/cm <sup>2</sup>	(	8015 PSI	A)
PRESSURES, OUTLET -					
PROOF	· <u></u>	_N/cm <sup>2</sup>	(	PS1	<b>A)</b>
BURST		_N/cm <sup>2</sup>	(	PS I	<b>A)</b>
OPERATING TEMPERATURE RANGE		_°c	(	o <sub>F</sub> )	
LEAKAGE -				V 1	
INTERNAL	· .	scc/hr OF		N/	cm <sup>2</sup>
			(_	PS	IA)
EXTERNAL	$2 \times 10^{-3}$	scc/s OF		N/	cm <sup>2</sup>
			(_	PS	IA)
MATERIAL -					
CONSTRUCTION					<del></del>
SEAT		<del> </del>			
CONNECTION -					
INLET					
OUTLET					
MASS	0.58	kg	(	1.3 16	m)
OTHER SIGNIFICANT CHARACTERISTICS					

MANUFACTURER	Tavco, Inc.	(16	<u>5)                                    </u>		
PART NUMBER _	2344344				
PROGRAM					garan Sar <del>Nasa Sara</del>
CONTRACTING AG	ENCY				
PRIME CONTRACT	OR				
STATUS	n Marin John State (1997) Marin San Japan San Japan				
		_Yes_			
FLOWN					
LAUNCH VEHI	CLE				
AVAILABILITY					
COST/PROCUREME	NT INFORMATION				

TYPE	·		<del></del>		-
DESIGN FLOW MEDIA	Air, N <sub>2</sub>	· · · · · · · · · · · · · · · · · · ·			-
INLET PRESSURE RANGE	113-14	8 N/cm <sup>2</sup>	(	165-215 PSIA)	
REGULATED OUTLET PRESSURE	68.9	±6.8	N/cm <sup>2</sup> @	scc/s FLOW RATE	RÄNGE
		the state of the s		scf/m FLOW RATE	
FLOW RATE RANGE	$9.4 \times 10$			I/cm2 INLET PRESSURE RAI	
	( 20	•		PSIA INLET PRESSURE RAN	
OUTLET LOCKUP PRESSURE				PSIA)	<b>.</b> .
DYNAMIC PERFORMANCE -		<b>-</b> ''' - '''	\		
MAX. INLET PRESSURE CHANGE RATE		N/cm <sup>2</sup> /Min	1	PSIA/Min)	
MAX. REGULATED PRESSURE OSCILLATION .					
	the state of the s			INLET PRESSURE RANGE)	
LIFE					
		_ 0.02=0			
PRESSURES, INLET - PROOF		N/cm <sup>2</sup>	1	PSIA)	
BURST		_		PSIA)	
PRESSURES, OUTLET -		N/cm <sup>2</sup>		PSIA)	
BURST		and the second second second second		PSIA)	
OPERATING TEMPERATURE RANGE			4 - 4 - 4 24 15 -	o <sub>F</sub> )	
		_ •	\	······································	
LEAKAGE -	10			9	
INTERNAL		_scc/hr OF		N/cm <sup>2</sup> PSIA)	
EXTERNAL	0	enals OF		FSTA)	
EXTERNAL		. acc/s or		PSIA)	
			<b>\</b>		
MATERIAL - CONSTRUCTION					
SEAT					
			ب درسته در استهما و المتحدد		
CONNECTION - Converse of the c					
OUTLET					
	0.3			0.7 lbm)	
MASS		kg		0.7_1bm)	
OTHER SIGNIFICANT CHARACTERISTICS					

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 1.2.6 REGULATOR, GAS PRESSURE

Fairchild Industries

MANUFACTURER _	Stratos Div.	(31)
PART NUMBER	385000	
		LM (ascent engine tank pressure regulator)
		In (ascent engine tank probato rogerous)
CONTRACTING AGE	ENCY	NASA
		그렇게 그의 그 모르는 말로 하고 하는 사람들이 다듬는 것이 없다.
PRIME CONTRACTO	)R	G.A.C.
		이 하는 병원 이 회사를 보고 한 수술 하는 것이 모든 이렇게 되었다. 그들은 모든 모든 다음
STATUS		e de Yes e estado de la compansión de la c La compansión de la compa
		<u>Yes</u>
LAUNCH VEHIC	CLE	
AVAILABILITY		Not in production. Available on special orde
COST/PROCUREMEN	T INFORMATION	ali ang manganan kanang mengangan panggan panggan panggan panggan panggan panggan panggan panggan panggan pang Manggan panggan pangga
	인 병화교회 회사 (함께 1일) 교육의 관측 경기 등교사회의	마음 사용하는 사람들이 가장 보고 있다. 그런 사람들은 사람들은 사용하는 것이 되었다. 그런 사람들은 사람들이 되었다. 

YPE	Dual, Pilot-loaded (	Series Redundant)
DESIGN FLOW MEDIA	Не	
INLET PRESSURE RANGE	285.9 - 2423.3 N/cm <sup>2</sup>	( 414.7 - 3514.7 PSIA)
REGULATED OUTLET PRESSURE	$\frac{121-125}{(176-182)} \pm \frac{2}{\pm} \frac{N}{4}$	$\frac{66,080}{140}$ scc/s FLOW RATE RAN
FLOW RATE RANGE	66 080	2423 N/cm2 INLET PRESSURE RANGE 3514.7 PSIA INLET PRESSURE RANGE)
OUTLET LOCKUP PRESSURE	( 140 SCFM @ 414.7	PSIA INLET PRESSURE RANGE)
	<b>***</b>	
DYNAMIC PERFORMANCE -	N/cm <sup>2</sup> /Min	/ no.1444;->
MAX. INLET PRESSURE CHANGE RATE		(PSIA/Min)N/cm <sup>2</sup> INLET PRESSURE RANGE
MAX. REGULATED PRESSURE OSCILLATION .	± N/cm² OVER	THE STATE OF THE S
LIFE	FSTA OVER	FSTA INCEL PRESSURE RANGE)
PRESSURES, INLET -	3678 N/cm <sup>2</sup>	(5335_ PSIA)
PROOF		0015
BURST	5526N/cm <sup>2</sup>	( <u>8015</u> PSIA)
PRESSURES, OUTLET -	004	2/0
PROOF	234 N/cm <sup>2</sup>	(PSIA)
BURST	$\frac{355}{+71.1}$ N/cm <sup>2</sup>	( 515 PSIA)
OPERATING TEMPERATURE RANGE	-65 to 00	(-85 to + 160)
LEAKAGE -		
INTERNAL	101 scc/hr 0F	@N/cm <sup>2</sup>
		(PSIA)
EXTERNAL	00033 scc/s 0F	w N/cm <sup>2</sup>
		( PSIA)
MATERIAL - CONSTRUCTION	17-4 PH, 300 Serie	s Cres
	Kynar	
SEAT	Ayllat	<del>and the state of </del>
CONNECTION -		
INLET	3/8 inch tube stub	<del>and and a substantial property of the state of the state</del>
OUTLET	1/2 inch tube stub	
MASS	kg	( <u>2.9</u> 1 bm)
OTHER SIGNIFICANT CHARACTERISTICS		

MANUFACTURER _	Fairchild Indu Stratos Div.	istries (31)
PART NUMBER	63-036	
PROGRAM		Apollo (Command Module RCS, LMRCS)
CONTRACTING AGE	NCY	NASA
PRIME CONTRACTO	R	Rockwell International, Grumman Aircraft
STATUS		
		Yes and in the second of the s
FLOWN		Yes
LAUNCH VEHICE	LE	
AVAILABILITY		Not in production. Available on special o

TYPE	Dual, F	TIOL LUAGE	a (series ream)	dant)
DESIGN FLOW MEDIA	Не			
INLET PRESSURE RANGE	192.8 -	3112.7 N/cm <sup>2</sup>	( 279.7-451	4.7 roia)
REGULATED OUTLET PRESSURE*		<u> </u>	N/cm <sup>2</sup> 01.4x10 <sup>4</sup> so	C/S FLOW RATE RANGE
	(		PSIGe 30 so	
FLOW RATE RANGE		scc/s @	N/cm <sup>2</sup> INLE	T PRESSURE RANGE
	(	SCFM @	PSIA INLE	T PRESSURE RANGE)
OUTLET LOCKUP PRESSURE	139 215	_ N/cm <sup>2</sup>	(-313 - PS)	Depending (Solar) Setting (Solar)
DYNAMIC PERFORMANCE -	— <del></del>			below)
MAX. INLET PRESSURE CHANGE RATE		_ N/cm <sup>2</sup> /Min	( PS	IA/Min)
MAX. REGULATED PRESSURE OSCILLATION .	<u>+</u>	_ N/cm <sup>2</sup> OVER	M/cm <sup>2</sup> INLET PRI	SSURE RANGE
	( <u>±</u>	PSIA OVER	PSIA INLET PRES	SSURE RANGE)
LIFE	7000	_ CYCLES		
PRESSURES, INLET -				
PR00F	4674	_ N/cm <sup>2</sup>	( 6780	PSIA)
BURST	6215	_N/cm <sup>2</sup>	(9015	SIA)
PRESSURES, OUTLET -				
PROOF	279	_N/cm <sup>2</sup>	( <u>405</u> F	SIA)
BURST	355	_ N/cm <sup>2</sup>		SIA)
OPERATING TEMPERATURE RANGE	-65 to +	-,oc	(-85  to  +1)	)F)
LEAKAGE -				
INTERNAL	17	_scc/hr OF	<u> </u>	N/cm <sup>2</sup>
			(	PSIA)
EXTERNAL	.00005	scc/s OF	•	N/cm <sup>2</sup>
			. (	PSIA)
MATERIAL -	17 / 21	200 0		
CONSTRUCTION		300 Serie	s Cres	
SEAT	Kynar	· · · · · · · · · · · · · · · · · · ·		
CONNECTION -	0062	( 25 :-)		
INLET	.0063 m	(.25 in)		
OUTLET	.0063 m	(.25 in) 1		
ASS	1.3	kg	(	(bm)
ther significant characteristics Primary regulator: 124+ 2	to 200+ 1	2 N/cm <sup>2</sup> (1	.81+3 to 291+3 j	osig)
Secondary regulator: 127+	<del></del> .			
Depending on application.		,	(2001 0 60 290	o hars)

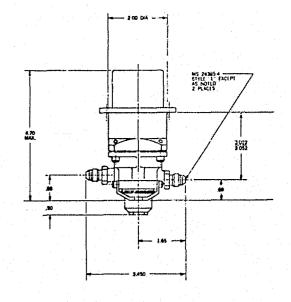
MANUFACTURER _	Fairchild Indus Stratos Div.	(31)
•		
PART NUMBER	65-168	
PROGRAM		Saturn IV-B
PROGRAMILITATION		
CONTRACTING AGE	NCY	NASA
OUNTRACTING AGE		
PRIME CONTRACTO	)R	M.D.C.
STATUS		등에서 살아가 되는데 나는 사람들은 이 살을 못 하는 것 같아.
		Yes
		Yes
		Saturn
LAUNCH VEHIC	LE	- Sacurii
		Not in production. Available on special orde
AVAILABILITY		NOT IN Production. Available on special
		0.000
COST/PROCUREMEN	T INFORMATION	\$6000-9000
		- 19 <u>년 18 1 - 1 - 1 1</u> 1 1 1 1 1 1 1 1 1 1 1 1 1

TYPE	Dual, Pilot Loaded	(Series Redundant)
DESIGN FLOW MEDIA	Не	
INLET PRESSURE RANGE	251.4 - ZZ16.4 N/cm <sup>2</sup>	( 364.7 - 3214.7 PSIA)
REGULATED OUTLET PRESSURE	* ± N <sub>1</sub>	cm2 escc/s FLOW RATE RANGE
	વ	SIG scf/m FLOW RATE RANGE)
FLOW RATE RANGE	$\frac{7.0 \times 10^{5} \text{scc/s}}{(15)} = \frac{25}{36}$	1 N/cm2 INLET PRESSURE RANGE 15 PSIA INLET PRESSURE RANGE)
OUTLET LOCKUP PRESSURE	N/cm <sup>2</sup>	(_217.7_ PSIA)
DYNAMIC PERFORMANCE -		
MAX. INLET PRESSURE CHANGE RATE		(PSIA/Min)
MAX. REGULATED PRESSURE OSCILLATION .		N/cm <sup>2</sup> INLET PRESSURE RANGE PSIA INLET PRESSURE RANGE)
	5000	FSTA TREET FRESSURE RANGE)
LIFE	SOUO CYCLES	
PRESSURES, INLET -	3319 N/cm <sup>2</sup>	( 4815 PSIA)
PROOF	5526 N/cm <sup>2</sup>	( <u>4815</u> PSIA) ( <u>8015</u> PSIA)
PRESSURES, OUTLET -	***************************************	
PROOF	268 N/cm <sup>2</sup>	( 390 PSIA)
BURST	441N/cm <sup>2</sup>	( 640 PSIA)
OPERATING TEMPERATURE RANGE	-23 to 51 % c	( -10 to 125
LEAKAGE -		
INTERNAL	scc/hr OF	0N/cm <sup>2</sup>
	.0002	( PSIA)
EXTERNAL	.0002 scc/s 0F	N/cm²
		(PSIA)
MATERIAL - CONSTRUCTION	17-4 PH, 300 Series	Cres
SEAT	Kynar	
CONNECTION -		
INLET	MC124-C4	<del>alan and a salah and a salah a</del>
OUTLET	MC124-C4	
MASS	kg	( <u>3.0</u> 1bm)
OTHER SIGNIFICANT CHARACTERISTICS		가는 가능한 하는 그리고 열차를 받는다.
* Primary $135 \pm 2 \text{ N/cm}^2$ (196	5 <u>+</u> 3 psig)	
Secondary $137 \pm 2 \text{ N/cm}^2$ (20		

	<b>M</b>	Tho	•	16)		
MANUFACTURER	Taveo,	Inc.		10)		
PART NUMBER _	234635					
	e de la companya de La companya de la co					
PROGRAM	•••••				 	 
CONTRACTING AC	FNAV					
CONTRACTING AG	ENCY					
PRIME CONTRACT	OR					
OTATUO						
QUALIFIED			Yes			
FLOWN						
LAUNCH VEHI	CLE					
AUALLABLITY						 
AVAILABILITY						

TYPE			<del> </del>		
DESIGN FLOW MEDIA	Air, N	2			
INLET PRESSURE RANGE	699.8-2	.078 N/cm <sup>2</sup>	( 1015	-3015 PSIA)	
REGULATED OUTLET PRESSURE				scc/s FLOW RATE R scf/m FLOW RATE R m² inlet pressure rang	
FLOW RATE RANGE				m <sup>2</sup> INLET PRESSURE RANG A INLET PRESSURE RANG	
OUTLET LOCKUP PRESSURE		N/cm <sup>2</sup>	(	PSIA)	
DYNAMIC PERFORMANCE -  MAX. INLET PRESSURE CHANGE RATE  MAX. REGULATED PRESSURE OSCILLATION .	<u>±</u>	N/cm2 OVER	N/cm <sup>2</sup> IN	LET PRESSURE RANGE	
	• • • • • • • • • • • • • • • • • • • •	<del></del>	PSIA INL	ET PRESSURE RANGE)	
LIFE	<del></del>	CYCLES			
PRESSURES, INLET - PROOF	1 1		, , , , , , , , , , , , , , , , , , , ,	PSIA)	
PRESSURES, OUTLET -					
PROOF				PSIA) PSIA)	
OPERATING TEMPERATURE RANGE		°c	(	°F)	
LEAKAGE -				N/cm <sup>2</sup> PSIA)	
EXTERNAL ,	0	_ scc/s OF		M/cm <sup>2</sup> PSIA)	
MATERIAL - CONSTRUCTION					
CONNECTION - INLET					
MASS  OTHER SIGNIFICANT CHARACTERISTICS	0.2	kg	(0	.6 1bm)	

MANUFACTURER	Conso1	.idated	Controls	Corp
PIAROT AUTORER				
PART NUMBER	6890			



PROGRAM	Minutemen III
CONTRACTING AGENCY	USAF
PRIME CONTRACTOR	Rockwell International Corp.
STATUS	
QUALIFIED	Yes
FLOWN	Yes
LAUNCH VEHICLE	Minuteman III
AVAILABILITY	180 days
	그리고 하다는 사람들 마모르는 잘 못 부탁하는데 되었지다.
COST/PROCUREMENT INFORMATION	5 to 10 units - \$12,000
	보통하는 경기보다 인상에 대한 발생을 받아 보통했다. 기반을 했다.
에 하면함, 기본 시간 기본 경우 지난 명한 전에 가는 함께 있습니다. 2010년 - 지난 지난 대한 12 10 12 12 12 12 12 12 12 12 12 12 12 12 12	
*플레크 등의 경기를 하고 있다. 그는 그는 그를 받는 것이다. 당시 등의 기상 등의 원기 등이 되는 기상이 되었다.	

TYPE	Single stage
DESIGN FLOW MEDIA	Не
INLET PRESSURE RANGE	$\frac{2520-286}{\text{N/cm}^2}$ ( $\frac{3655-415}{\text{PSIA}}$ )
REGULATED OUTLET PRESSURE	162 to 170 $_{\rm N/cm^2}$ $_{\rm 0}$ 0-1220 $_{\rm scc/s}$ FLOW RATE RANGE ( 236 to 247 $_{\rm PSIG}$ 0 to 26 $_{\rm scf/m}$ FLOW RATE RANGE)
FLOW RATE RANGE	$\frac{0-1220}{(0 \text{ to } 26 \text{ scfm} \cdot \text{e} \frac{286-2520}{415-3655}  \text{psia inlet pressure range})$
OUTLET LOCKUP PRESSURE	$\frac{180}{\text{N/cm}^2} \text{N/cm}^2 \qquad (\frac{262}{\text{PSIA}})$
DYNAMIC PERFORMANCE -  MAX. INLET PRESSURE CHANGE RATE  MAX. REGULATED PRESSURE OSCILLATION -	$\frac{2 \times 10^6}{\pm} \frac{\text{N/cm}^2/\text{Min}}{\text{N/cm}^2 \text{ OVER } \frac{286 - 2520 \text{ cm}^2}{3655} \text{INLET PRESSURE RANGE}}{\text{PSIA OVER } \frac{415 - 3655}{415 - 9514} \text{ INLET PRESSURE RANGE}}{\text{CYCLES}}$
PROOF	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
PRESSURES, OUTLET - PROOF BURST  OPERATING TEMPERATURE RANGE	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
LEAKAGE -	
EXTERNAL	$2.7 \times 10^{-4}$ scc/s OF He $= \frac{(3655 \text{ PSIA})}{(3655 \text{ PSIA})}$
MATERIAL - CONSTRUCTION	304L 440A
CONNECTION -	MS 24385-4E
OUTLET MASS	MS 24385-4E  0.68 kg ( 1.5 lbm)
OTHER SIGNIFICANT CHARACTERISTICS	[보호 전면별] 보고 하는 보다는 사람이 되는 말로 보다 하고 모

MANUFACTURER	Fairchild Industr Stratos Div.	ies (31)		•	
PART NUMBER _	332000				
PROGRAM		Minutemen I	II		
CONTRACTING AG	ENCY	USAF			
PRIME CONTRACT	OR	Bell Aerosp	ace		
STATUS QUALIFIED		Yes			
FLOWN		Yes			
AVAILABILITY		In producti	.on		
COST/PROCUREME	NT INFORMATION	\$4000-6000			

TYPE	Single, pilot-loaded
DESIGN FLOW MEDIA	He
INLET PRESSURE RANGE	286-2423 N/cm <sup>2</sup> (415-3515 PSIA)
REGULATED OUTLET PRESSURE	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
FLOW RATE RANGE	$\frac{11,800}{(25)} \text{ scc/s} = \frac{286-2423}{(25)} \text{ N/cm}^2 \text{ INLET PRESSURE RANGE}$
OUTLET LOCKUP PRESSURE	$\frac{180}{\text{N/cm}^2} \qquad (\underline{262} \text{PSIA})$
DYNAMIC PERFORMANCE - MAX. INLET PRESSURE CHANGE RATE MAX. REGULATED PRESSURE OSCILLATION .	
LIFE	
PRESSURES, INLET - PROOF	$\frac{3612}{4816} \frac{\text{N/cm}^2}{\text{N/cm}^2}$ ( $\frac{5240}{6985} \frac{\text{PSIA}}{\text{PSIA}}$ )
PRESSURES, OUTLET - PROOF BURST  OPERATING TEMPERATURE RANGE	$ \frac{217 \text{ N/cm}^2}{424 \text{ N/cm}^2} \qquad (315 \text{ PSIA}) \\ -6.6 \text{ to } 65 \text{ oc} \qquad (20 \text{ to } 150 \text{ oc}) $
LEAKAGE -	
EXTERNAL	(PSIA)
MATERIAL - CONSTRUCTION	17-4 PH, 300 Series Cres Kynar
CONNECTION - INLET	MS 24385-4 MS 24385-1
MASS OTHER SIGNIFICANT CHARACTERISTICS	

MANUFACTURER	<u>Marotta</u>	Scientific	Controls (53)
MODEL NO.	RS572VB		
PART NUMBER	280601		

PROGRAM	SAFEGUARD
CONTRACTING AGENCY	USAF
PRIME CONTRACTOR	Avco
STATUS	
QUALIFIED	yes
FLOWNLAUNCH VEHICLE	yes in the second of the secon
AVAILABILITY	
COST/PROCUREMENT INFORMATION	

172 ( 250 0 5-1.53x ( 420-325 217	$\frac{58}{1000} \text{ N/cm}^2$ $\frac{\pm}{1000} \frac{25}{1000}$ $\frac{5}{1000} \frac{389}{1000}$ $\frac{5}{1000} \frac{565}{1000}$ $\frac{5}{1000} \frac{565}{1000}$ $\frac{5}{1000} \frac{5}{1000}$	N/cm <sup>2</sup> (1.9 PSIG (4.9 -217 -315	0-3000 psig 98x10 <sup>5</sup> scc/s FL 20 scf/m FL 1/cm <sup>2</sup> INLET PRESS PSIA INLET PRESS 15 PSIA)	OW RATE RANG
379-206 172 (_250 0 <sup>5</sup> -1.53x (420-325 217	$\frac{58}{1000} \text{ N/cm}^2$ $\frac{\pm}{1000} \frac{25}{1000}$ $\frac{5}{1000} \frac{389}{1000}$ $\frac{5}{1000} \frac{565}{1000}$ $\frac{5}{1000} \frac{565}{1000}$ $\frac{5}{1000} \frac{5}{1000}$	N/cm <sup>2</sup> (1.9 PSIG (4.9 -217 -315	$98  imes 10^5$ scc/s FL $20$ scf/m FL $1/cm^2$ inlet presspan inlet press $15$ psia)	OW RATE RANG
$ \begin{array}{r} (\underline{250}) \\ 0 \\ -1.53 \\ \underline{420-325} \\ 217 \\ \underline{\pm} \end{array} $	$\pm 25$ $10^{5}$ $389$ $5$ $5$ $5$ $5$ $6$ $6$ $6$ $6$ $6$ $6$ $6$ $6$ $6$ $6$	_ PSIG @ _4: -217I -315(3'	20 scf/m FL I/cm <sup>2</sup> inlet pres PSIA inlet press 15 pSIA)	OW RATE RANG
$0\frac{5-1.53x}{420-325}$ $217$	$1Q_{cc/s}^{5} = 389$ $\frac{5}{5}$ SCFM $= 565$ $\frac{1}{5}$	-217 -315 (3	I/cm <sup>2</sup> INLET PRES PSIA INLET PRESS 15 PSIA)	SURF RANGE
(420-325 217 ±	SCFM <u>© 565-</u> _ N/cm <sup>2</sup> _ N/cm <sup>2</sup> /Min	-315	PSIA INLET PRESS 15 PSIA)	SURE RANGE SURE RANGE)
<u>±</u>	_ N/cm <sup>2</sup> _ N/cm <sup>2</sup> /Min	(_3	15 PSIA)	
<u>±</u>		(	na i dir.	
<u>±</u>		(	and the s	
	N/2 2		PSIA/MIN)	)
(+	_ m/cm OVER	N/cm <sup>2</sup>	INLET PRESSURE	RANGE
\ <del></del>	PSIA OVER	PSIA	INLET PRESSURE R	ANGE)
	_ CYCLES			
13,799	_N/cm²	( <u>20</u> ,	UIS PSIA)	
	_ N/cm <sup>2</sup>	(	PSIA)	
	N/cm <sup>2</sup>	(	PS IA)	
7.2 to /	3.8 _°C	( <del>14</del> 5	to 165	
	scc/hr OF	@	N/cm <sup>2</sup>	
	scc/s OF	@	N/cm <sup>2</sup>	
	n de la companya de Na companya de la co			
AL. ALY				
Nylon				
		·····	<del> </del>	
1.70	ka	( )	3.76 <sub>lbm</sub> )	
max. wi	Thout fil:	er unions		
	5181 13,799 7.2 to 7	(± PSIA OVER	(± PSIA OVER PSIA (± PSIA (1	(± PSIA OVER PSIA INLET PRESSURE F  CYCLES   5181 N/cm <sup>2</sup> (

MANUFACTURER	Consolidated	Controls	Corp.
			(20)

PART NUMBER 6894

(Originally manufactured by National Water Lift Co.)

PROGRAM	Mariner '71, Viking Orbiter '75
CONTRACTING AGENCY	JPL - Committee of the second
PRIME CONTRACTOR	Martin Marietta Corp.
	[전화는 경기 호텔 전환 등 경기 전환 보다 보고 있다. 보고
STATUS	연기는 이번 물리 얼마나 남자들이 만든 왜 눈물을 하고 되었다.
QUALIFIED	Yes and the second of the seco
FLOWN	MYes The Control of t
LAUNCH VEHICLE	
AVAILABILITY	180 days
COST/PROCUREMENT INFORMATION	5 to 10 units - \$12,000
소리왕으로 있다. 유리 이 이 등에 발로로 그렇게 되었다. 1993년 - 1994년 이 등에 대한 기업 등에 1991년 1일	

TYPE	Single stage GN <sub>2</sub> or He	
DESIGN FLOW MEDIA	on <sub>2</sub> or ne	
INLET PRESSURE RANGE	N/cm <sup>2</sup>	( 4015-475 PSIA)
REGULATED OUTLET PRESSURE	175 ±5	N/cm <sup>2</sup> a 7693 scc/s FLOW RATE RANG
	( 255 ± 8	PSIG @ 16.3 scf/m FLOW RATE RANGE
FLOW RATE RANGE	0-7693 scc/s @ 327	7-2768 N/cm2 INLET PRESSURE RANGE
	( <u>0-16.3</u> scfm @ <u>475</u>	5-4015 PSIA INLET PRESSURE RANGE)
OUTLET LOCKUP PRESSURE	N/cm <sup>2</sup>	(
DYNAMIC PERFORMANCE -		
MAX. INLET PRESSURE CHANGE RATE MAX. REGULATED PRESSURE OSCILLATION .	$2 \times 10^{\circ}$ N/cm <sup>2</sup> /Min	2763 × 100 PSIA/Min)
MAX. REGULATED PRESSURE OSCILLATION .	± 10.4 N/cm <sup>2</sup> OVER	327-27 N/cm2 INLET PRESSURE RANGE
		175-40 PSIA INLET PRESSURE RANGE)
LIFE	20,000 CYCLES	
PRESSURES, INLET -		
PR00F	4147N/cm <sup>2</sup>	( 6015 PSIA)
BURST	$\frac{6077}{\text{N/cm}^2}$	( <u>8815</u> PSIA)
PRESSURES, OUTLET -		
PROOF	289 N/cm <sup>2</sup>	(420 PSIA)
BURST	424 N/cm <sup>2</sup>	( <u>615</u> PSIA)
OPERATING TEMPERATURE RANGE	-1.1to $48.9$ c	( +30to120 o <sub>F</sub> )
LEAKAGE -		
INTERNAL	20 scc/hr 0F G	EN <sub>2 @</sub> 2768 N/cm <sup>2</sup>
		( 4015 PSIA)
EXTERNAL	$1 \times 10^{-6}$ scc/s OF H	le <u>© 2768</u> N/cm <sup>2</sup>
		( <u>4015</u> PSIA)
MATERIAL -		
	304 L	
SEAT	440 A	
CONNECTION -		
INLET		
OUTLET		
1ASS	0.834 kg	( <u>1.84</u> lbm)
	ny ny	
THER SIGNIFICANT CHARACTERISTICS		

Compatible with the saturated vapors of  $N_2O_4$ ; MMH;  $N_2H_4$ 

MANUFACTURER	TRW Systems	(28)
PART NUMBER _	JPL 10000055	
FART NUMBER _		
ngaloring open period by the second of the s		
PROGRAM		Mariner '69
CONTRACTING AG	ENCY	Jet Propulsion Laboratory
PRIME CONTRACT	OR	
STATUS		그래는 그는 그리고 그리고 이 교리를 모르겠다고 했다. 그렇다요?
		Mariner '64
		Mariner '64, '69
		Mariner 04, 09
LAUNCH VEHIC	CLE	
		물리 그의 역사 그 없는 사람이 하는 상태를 모르고 주말했다.
AVAILABILITY		_Not in manufacture
COST/PROCUREMEN	IT INFORMATION	
		요한 사람들이 가능하는 것을 받았다. 그렇게 나를 하는 것을 하는 것을 하는 것이 되었다. 1982년 1일 - 1982년 1일
		<u> </u>

TYPE	Single Stage direct acting - tank pressuriza-
DESIGN FLOW MEDIA	Gaseous nitrogen
INLET PRESSURE RANGE	$\frac{248-2482}{\text{N/cm}^2}$ N/cm <sup>2</sup> ( $\frac{360-3600}{\text{PSIA}}$ )
REGULATED OUTLET PRESSURE	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
FLOW RATE RANGE	
OUTLET LOCKUP PRESSURE	$\frac{217}{\text{N/cm}^2} \qquad (\frac{316}{\text{PSIA}})$
DYNAMIC PERFORMANCE -  MAX. INLET PRESSURE CHANGE RATE  MAX. REGULATED PRESSURE OSCILLATION .  LIFE	$\frac{7.446\times10^{7}}{\pm 6.8} \frac{\text{N/cm}^{2}/\text{Min}}{\text{N/cm}^{2} \text{ OVER}} \frac{2482}{3100-} \frac{(1.080\times10^{8} \text{N/cm}^{2})}{\text{N/cm}^{2} \text{ INLET PRESSURE RANGE}}{\text{N/cm}^{2} \text{ INLET PRESSURE RANGE}}$ $\frac{\text{Limited}}{\text{CYCLES}} \frac{10.080\times10^{8}}{\text{N/cm}^{2}} \frac{10.080\times10^{8}}{\text{N/cm}^{2}}$
PRESSURES, INLET - PROOF	3723 N/cm <sup>2</sup> ( 5400 PSIA) 5460 N/cm <sup>2</sup> ( 7920 PSIA)
PRESSURES, OUTLET - PROOF	1861 N/cm <sup>2</sup> ( 2700 PSIA) 2730 N/cm <sup>2</sup> ( 3960 PSIA)
OPERATING TEMPERATURE RANGE	$-10to+75$ °c $(+14to+167 \circ_{F})$
LEAKAGE -	4.0 scc/hr 0F GN2 @ 212 N/cm <sup>2</sup>
EXTERNAL	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
MATERIAL - CONSTRUCTION	6061 T651 Al Alloy 6061 T651 Al Alloy
CONNECTION -	.0063m (.25 in) tube - welded
OUTLET	.0063m (.25 in) tube - bolt flange
MASS	63kg (1_41bm)
OTHER SIGNIFICANT CHARACTERISTICS	HT 1. 2 - 1. 1. 1. 1 : 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.

MANUFACTURER	HTL Industries	, Inc. (21)		
PART NUMBER	146650-10 14	6931		
BOOODAN		Centaur		
	GENCY	General Dynam	ics/Convair Aerospa	ce Div.
STATUS		Vac by CD/CA		
FLOWN		Yes, by GD/CA		
LAUNCH VEHI	CLE			
AVAILABILITY				
COST/PROCUREME	NT INFORMATION			

TYPE	Single stage	
DESIGN FLOW MEDIA	He	
INLET PRESSURE RANGE	337-313 N/cm <sup>2</sup>	(490-455 PSIA)
REGULATED OUTLET PRESSURE		n <sup>2</sup> @scc/s FLOW RATE RANGE
REGULATED VOILET FRESSURE	/ 297 to 315 PSI	G . COFFE BLOW DATE DANCE
FLOW RATE RANGE	$4.2 \times 10^3$ 337-313	N/cm2 INLET PRESSURE RANGE
FLOW RATE RANGE	( 8.9 SCFM 490-455	PSIA INLET PRESSURE RANGE)
OUTLET LOCKUP PRESSURE		(312-330 PSIA)
DYNAMIC PERFORMANCE -		
MAX. INLET PRESSURE CHANGE RATE		
MAX. REGULATED PRESSURE OSCILLATION .	±N/cm <sup>2</sup> OVER	_ N/cm <sup>2</sup> INLET PRESSURE RANGE
	(± PSIA OVER	_ PSIA INLET PRESSURE RANGE)
LIFE	200 CYCLES	
PRESSURES. INLET -		
PROOF	N/cm <sup>2</sup>	(PSIA)
BURST	N/cm <sup>2</sup>	(PSIA)
PRESSURES, OUTLET -		
PROOF	N/cm <sup>2</sup>	(435PSIA)
BURST	N/cm <sup>2</sup>	(PSIA)
OPERATING TEMPERATURE RANGE	$\frac{-73.3^{+51}}{\sigma_0^6}\sigma_0^{6}$ fluid	$(\frac{-100-+125}{6})$
LEAKAGE -		
INTERNAL	4.9x10 <sup>2</sup> scc/hr 0F <u>He</u>	● <u>337-313</u> N/cm <sup>2</sup>
n de la companya de Notas de la companya		(490-455 PSIA)
EXTERNAL	scc/s OF	$= \frac{337 - 313}{155} \text{ N/cm}^2$
		(490-455 PSIA)
MATERIAL -		
CONSTRUCTION	Aluminum and Cres	
SEAT		
CONNECTION -		
INLET		
OUTLET		
ASS	kg	( 2.5 1 bm)
THER SIGNIFICANT CHARACTERISTICS		
	5 Micron Nominal	
	- IIIOI NOMILIAL	アンス・アン・コー・ディー・ディー・ディー・ だいしょうだい こうさい はんしょ

MANUFACTURER <u>HTL Industries</u>	s, Inc. (21)	
PART NUMBER146650-11	146709	
PROGRAM	Centaur	
CONTRACTING AGENCY		
PRIME CONTRACTOR	General Dynamic	es/Convair Aerospace D
STATUS		
QUALIFIED	Yes, by GD/CA	
FLOWN		
LAUNCH VEHICLE		
VAILABILITY		
OST/PROCUREMENT INFORMATION	and a second of the second sec	

4.2.6-39

#### 4.2.6 REGULATOR, GAS PRESSURE

TYPE	Single stage	
DESIGN FLOW MEDIA	_He	
	2326-492. N/cm <sup>2</sup>	( 3375-715PSIA)
INLET PRESSURE RANGE		
REGULATED OUTLET PRESSURE		m <sup>2</sup> @scc/s FLOW RATE RANGE
	- 2	IG @ scf/m FLOW RATE RANGE
FLOW RATE RANGE	$4.2 \times 10^{3} \text{scc/s} = 2326-4$	92 N/cm2 INLET PRESSURE RANGE
	( <u>8.9</u> scfm @ 3375-7	15 PSIA INLET PRESSURE RANGE)
OUTLET LOCKUP PRESSURE	313-337 N/cm <sup>2</sup>	(455-490 PSIA)
DYNAMIC PERFORMANCE -		
MAX. INLET PRESSURE CHANGE RATE		(PSIA/Min)
MAX. REGULATED PRESSURE OSCILLATION .		
	(± PSIA OVER	PSIA INLET PRESSURE RANGE)
LIFÉ	200 CYCLES	
PRESSURES. INLET -		
PROOF	N/cm <sup>2</sup>	( PSIA)
BURST		( PSIA)
PRESSURES, OUTLET -		
PROOF	N/cm <sup>2</sup>	( 640 <sub>PSIA</sub> )
	en de la companya de	( PSIA)
BURST  OPERATING TEMPERATURE RANGE	-73.3 - +51.6 fluid	(-100-+125° <sub>F</sub> )
OFERATING TEMPERATURE RANGE	-20 - +51.6°C ambient	(-5-+125°F)
LEAKAGE -		
INTERNAL	scc/hr OF	
		(PSIA)
EXTERNAL	scc/s OF	
		(PSIA)
MATERIAL -		
CONSTRUCTION		
SEAT	<del></del>	and the second s
CONNECTION -		
INLET	<u> منظم المنظم ا</u>	
OUTLET		
MASS	kg	( <u>2.5</u> 1bm)
OTHER SIGNIFICANT CHARACTERISTICS		

5 1 nominal

MANUFACTURER	Fairchild Indust Stratos Div.	ries (31)
PART NUMBER _	679000	
	ENCY	NASA
PRIME CONTRACT	OR	M.D.C.
	• • • • • • • • • • • • • • •	Yes
	OLE	Yes Saturn
AVAILABILITY		Not in production. Available on special order
COST/PROCUREMEN	IT INFORMATION	\$6,000-9,000

TYPE	Dual Pilot-Loaded (	Series Redundant)
DESIGN FLOW MEDIA	Не	
INLET PRESSURE RANGE	$\frac{423.8 - 2216.4}{\text{N/cm}^2}$	(614.7 - 3214.7)
REGULATED OUTLET PRESSURE		/cm <sup>2</sup> @scc/s FLOW RATE RANGE SIG @ 10-30_ scf/m FLOW RATE RANGE
FLOW RATE RANGE	$\frac{14,160}{(30)}$ scc/s = $\frac{423}{614}$ .	<del></del>
OUTLET LOCKUP PRESSURE	N/cm²	(
DYNAMIC PERFORMANCE -		
MAX. INLET PRESSURE CHANGE RATE MAX. REGULATED PRESSURE OSCILLATION .		(PSIA/Min)N/cm² INLET PRESSURE RANGE
	( PSIA OVER	PSIA INLET PRESSURE RANGE)
LIFE	5000 CYCLES	
PRESSURES, INLET -		
PROOF	3309 N/cm <sup>2</sup>	( <u>4800</u> PSIA)
BURST	<u>5515</u> _N/cm <sup>2</sup>	( <u>8000</u> PSIA)
PRESSURES, OUTLET -		
PROOF	<u>537</u> N/cm <sup>2</sup>	( <u>780</u> PSIA)
BURST	$\frac{896.3}{71}$ N/cm <sup>2</sup>	( 1300 PSIA)
OPERATING TEMPERATURE RANGE	$-65 \text{ to}^{71.1}_{\text{c}}$	$(\frac{-85 \text{ to } +160}{\text{F}})$
LEAKAGE -	4	
INTERNAL	2.42 x 10 scc/hr 0F	
	077	( PSIA)
EXTERNAL	977 scc/s OF	0N/cm <sup>2</sup>
		(PSIA)
MATERIAL - CONSTRUCTION	17-4 PH, 300 Series	Cres
SEAT	Polyimide, Kynar	
CONNECTION -		
INLET	MC223 Fitting with	MC-124-C4W Not
OUTLET	MC223 Fitting with	MC-124-C4W Not
MASS	1.1 kg	( <u>2.6</u> 1bm)
OTHER SIGNIFICANT CHARACTERISTICS		

MANUFACTURER Marotta Scientific Controls (53)

MODEL NO.	RV99A		
PART NUMBER	280778		
PROGRAM			<del></del>
CONTRACTING A	GENCY	NASA	
DDIME CONTDAC	TOR		
PRIME CONTRAC	**************************************		
STATUS		Yes	
		. les	
	ICLE		
AVAILARILITY.			
COST/PROCUREM	ENT INFORMATION		
		요한 경험도 시간 전에 하는 경험을 받는 경험을 보면 되는 것이다. 그런 경기 기업을 위한다는 것은 	

TYPE	Reducer - 2 Stage	
DESIGN FLOW MEDIA	He, N <sub>2</sub> , Air	
INLET PRESSURE RANGE	424-2078 N/cm <sup>2</sup> ( 615-301	5PSIA)
REGULATED OUTLET PRESSURE		cc/s FLOW RATE RANGE cf/m flow rate range)
upstream flow factor = .5 downstream flow factor = .8 outlet Lockup pressure	Out	PRESSURE RANGE)
DYNAMIC PERFORMANCE -		
MAX. INLET PRESSURE CHANGE RATE		
MAX. REGULATED PRESSURE OSCILLATION .	± N/cm <sup>2</sup> OVER N/cm <sup>2</sup> INLET PR	ESSURE RANGE
	(± PSIA OVERPSIA INLET PRE	SSURE RANGE)
LIFE	CYCLES	
PRESSURES, INLET -		
PROOr	3113 N/cm <sup>2</sup> (4515	PSIA)
BURST	$\frac{4147}{\text{N/cm}^2} \qquad (\underline{6015}$	PSIA)
PRESSURES, OUTLET -		
PROOF	N/cm <sup>2</sup> ( 4515	PSIA)
BURST	4147 N/cm <sup>2</sup> ( 6015	PSIA)
OPERATING TEMPERATURE RANGE		°F)
LEAKAGE -		
INTERNAL	scc/hr 0F	N/cm <sup>2</sup>
	(	PSIA)
EXTERNAL	scc/s OF	N/cm <sup>2</sup>
		PSIA)
MATERIAL - CONSTRUCTION	Cres 300 Series	
SEAT	Nylon	
CONNECTION -	MS33649-6 .00952 m (.375 in) T	.s.,
OUTLET	MS33649-6 .00952 m (.375 in) T	.S.
MASS	4.5 kg ( <u>10</u>	. 1 bm)
OTHER SIGNIFICANT CHARACTERISTICS	그는 가는 보이라는 것 같은 사람들이 없다.	

MANUFACTURER Tavco, Inc.

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.6 REGULATOR, GAS PRESSURE

(16)

PART NUMBER	2346334	
	GENCY	
PRIME CONTRAC	TOR	
QUALIFIED.		Yes
	CLE.,	
COST/PROCUREME	ENT INFORMATION	

TYPE	- ·				
DESIGN FLOW MEDIA		<u> </u>			<b>.</b>
INLET PRESSURE RANGE	630-263	30N/cm <sup>2</sup>	( 915	-3815 PSIA)	
REGULATED OUTLET PRESSURE				scc/s FLOW RATE	
FLOW RATE RANGE	$2.04 \times 1$	10 <sub>scc/s •</sub>	N/c	m <sup>2</sup> INLET PRESSURE RAN	NGE
OUTLET LOCKUP PRESSURE				PSIA)	
DYNAMIC PERFORMANCE -					
MAX. INLET PRESSURE CHANGE RATE		_ N/cm <sup>2</sup> /Min	(	PSIA/Min)	
MAX. REGULATED PRESSURE OSCILLATION .	<u>±</u>	N/cm <sup>2</sup> OVER _	N/cm <sup>2</sup> IN	ILET PRESSURE RANGE	
	(±	_ PSIA OVER _	PSIA INL	ET PRESSURE RANGE)	
LIFE		CYCLES			
PRESSURES, INLET -					
PROOF		N/cm <sup>2</sup>	(	PSIA)	
BURST		N/cm <sup>2</sup>	(	PSIA)	
PRESSURES, OUTLET -					
PROOF		_ N/cm <sup>2</sup>	(	PSIA)	
BURST		N/cm <sup>2</sup>	(	PSIA)	
OPERATING TEMPERATURE RANGE		_ °c	(	o <sub>F</sub> )	
LEAKAGE -					
INTERNAL	0.1	scc/hr OF	<u> </u>	N/cm <sup>2</sup>	
				PSIA)	
EXTERNAL	0	_ scc/s OF		N/cm <sup>2</sup>	
			<u> </u>	PSIA)	
MATERIAL -					
CONSTRUCTION					
SEAT					
CONNECTION -					
INLET					
OUTLET		هور ميناسم من بدائد دانداد			
4ASS	0.81	kg	( <u> </u>	.8 1 bm)	
OTHER SIGNIFICANT CHARACTERISTICS					

-	ESCON.
	155
17	1.6
1:4	36-3
1.7	252
100	9.7
1	4 100
	-

(27)

MANUFACTURER Allen Design, Inc.

PART NUMBER 13890	
PART NUMBER 13890	
PROGRAM	Aerobee
CONTRACTING AGENCY	
PRIME CONTRACTOR	Aerojet Mfg.
STATUS QUALIFIED	
FLOWN	Yes
LAUNCH VEHICLE	
AVAILABIL! TY	
COST/PROCUREMENT INFORMATION	One - \$710
보고 이 경험 기업 등이 있는 이 하이를 본 경기 있다. 이 사용 등이 하는 생각이 있는 사람들이 되었다. 등이 이 기업을 하는 사용이 하나 들어간 이 것을 받았다.	100 - \$365

TYPE	Spring	loaded r	egulator	<del></del>	·
DESIGN FLOW MEDIA	<u>GHe</u>		<del> </del>		And the second s
INLET PRESSURE RANGE	131-35	5 N/cm <sup>2</sup>	(	190-5	515 PSIA)
REGULATED OUTLET PRESSURE		±	N/cm <sup>2</sup> @		scc/s FLOW RATE RANG
	(	_	PSIA @		_ scf/m FLOW RATE RANG
FLOW RATE RANGE	80	scc/s @	27 40	_ N/cm <sup>2</sup> PSIA	INLET PRESSURE RANGE INLET PRESSURE RANGE)
OUTLET LOCKUP PRESSURE			(		
DYNAMIC PERFORMANCE -					
MAX. INLET PRESSURE CHANGE RATE		N/cm <sup>2</sup> /Min	(		PSIA/Min)
MAX. REGULATED PRESSURE OSCILLATION .	<u>±</u>	N/cm2 OVER _	N/c	n <sup>2</sup> INLET	PRESSURE RANGE
	( <u>+</u>	PSIA OVER _	PS I	A INLET	PRESSURE RANGE)
LIFE	100,000	CYCLES			
PRESSURES, INLET -					
PROOF	699	_N/cm <sup>2</sup>	(	1015	PSIA)
BURST	1044	_N/cm <sup>2</sup>	(	1515	PSIA)
PRESSURES, OUTLET -					
PROOF		N/cm <sup>2</sup>	· · · · · · · · · · · · · · · · · · ·		PSIA)
BURST		N/cm <sup>2</sup>	(_		PSIA)
OPERATING TEMPERATURE RANGE		_ °c	(_	-	°F)
LEAKAGE -					
INTERNAL *		scc/hr OF	<u> </u>	11 16	N/cm²/min
	None		(		PSIA)/min
EXTERNAL	None	scc/s OF			
			1		PSIA)
MATERIAL -					
CONSTRUCTION				<del></del>	
SEAT					
CONNECTION -					
INLET			<del></del>		
OUTLET	<del></del> _				
MASS	0.13	kg	(_	0.30	1bm)
OTHER SIGNIFICANT CHARACTERISTICS					

<sup>\*</sup>Internal leakage measured into .30m (12 in) length of .0063m (.25 in) tubing.

	en e	
MANUFACTURER	Whittaker Corp.	(37)
PART NUMBER	123035	
PROGRAM		
CONTRACTING A	GENCY	USAF
BOINE CONTRAC	700	Lockheed Missile and Space Div.
PRIME CONTRAC	10K	
STATUS		
		Yes
		어린 그래 가능과 보통도 있었다면서 하셨다고 있다

#### 4.2.6 REGULATOR, GAS PRESSURE

TYPE	Single-stage, pr	<u>ressure-balanced gage regul</u> ator
DESIGN FLOW MEDIA	<u> </u>	
INLET PRESSURE RANGE	2492-217 N/cm <sup>2</sup>	( 3615-315 PSIA)
REGULATED OUTLET PRESSURE	±	N/cm2 @scc/s FLOW RATE RANGE
		PSIA SCF/m FLOW RATE RANGE
FLOW RATE RANGE	scc/s @	N/cm2 INLET PRESSURE RANGE
		PSIA INLET PRESSURE RANGE)
OUTLET LOCKUP PRESSURE	N/cm <sup>2</sup>	(PS(A)
DYNAMIC PERFORMANCE -		
MAX. INLET PRESSURE CHANGE RATE	N/cm <sup>2</sup> /Min	( PSIA/Min)
MAX. REGULATED PRESSURE OSCILLATION .	± N/cm <sup>2</sup> OVER	N/cm2 INLET PRESSURE RANGE
	(± PSIA OVER	PSIA INLET PRESSURE RANGE)
LIFE	CYCLES	
PRESSURES, INLET -		
PROOF	3113 N/cm <sup>2</sup>	( <u>4515</u> PSIA)
BURST	<u>4147</u> N/cm <sup>2</sup>	( <u>6015</u> PSIA)
PRESSURES, OUTLET -		
PR00F	68.9 N/cm <sup>2</sup>	( <u>100</u> PSIA)
BURST	86.1 N/cm <sup>2</sup>	( 125 PSIA)
OPERATING TEMPERATURE RANGE	-73.3 to 37.7	(-100 to +100 Fluid
LEAKAGE -		
INTERNAL	12,000 scc/hr OF_	2492N/cm <sup>2</sup>
		( 3615 PSIA)
EXTERNAL	0scc/s OF	N/cm <sup>2</sup>
		(PSIA)
MATERIAL -		하는 아이는 없는 사람이 가지 않았다.
CONSTRUCTION	Aluminum	
SEAT		
CONNECTION -		
INLET	_AND10050-8	
OUTLET	MS24386-8	
1ASS	kg	( <u>1.6</u> 1 bm)
OTHER SIGNIFICANT CHARACTERISTICS		

See also Whittaker Test Report No. 59-741



### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.7 FILL AND VENT VALVE

MANUFACTURER	Consolidated Contr	cols Corp.
		(20)
PART NUMBER	72580	

PROGRAM	P95
CONTRACTING AGENCY	USAF
PRIME CONTRACTOR	Lockheed Missiles and Space Co., Inc.
	네는 경기 사이는 사람이 얼마는 그림 네트워져 그렇는 말을 즐겁지만.
STATUS	그리다 이 동안 이야 같은 하지만 보고 되고 있다. 한테 전환 경험
QUALIFIED	Yes the line of the first the second
FLOWN	Yes
LAUNCH VEHICLE	Agena
AVAILABILITY	180 days
COST/PROCUREMENT INFORMATION	5 to 10 units - \$2000

### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.7 VALVE, FILL AND VENT

TYPE	Manual
DESIGN FLOW MEDIA	N <sub>2</sub>
RATED FLOW AT DIFFERENTIAL PRESSURE (ACROSS BOTH FLIGHT AND GROUND HALVES IN EITHER DIRECTION) -	.012 in (0.5 in) orifice
LIÇUID	kg/sec OF @ N/cm <sup>2</sup> ,°C
	( lbm/sec OF ePSID, OF)
GAS	scc/s OF @ N/cm <sup>2</sup> , OC  ( SCFM OF
	(SCFM OFOF)
INTEGRAL FILTRATION	200 MICRONS ABSOLUTE
LIFE	100 CYCLES
PRESSURES -	
OPERATING	$\frac{2492}{\text{N/cm}^2} \text{N/cm}^2 \qquad (\frac{3615}{\text{PSIA}})$
PROOF	$\frac{3733}{\text{N/cm}^2} \qquad (\frac{5415}{\text{PSIA}})$
BURST	6215 N/cm <sup>2</sup> ( 9015 PSIA)
OPERATING TEMPERATURE RANGE	<u>-34to+60</u> ° <sub>C</sub> ( <u>-30to140</u> ° <sub>F</sub> )
LEAKAGE -	
INTERMAL	
EXTERNAL	.0002 scc/s OF GN <sub>2</sub> ( 3615 PSIA) 2492 N/cm <sup>2</sup>
EXTERNAL	(
MATERIAL - CONSTRUCTION	Cres
SEAT	Cres
SEAT THE REPORT OF THE PARTY OF	
CONNECTIONS -	0.56.10.70
DESCRIPTION OF GROUND HALF	MS Tube Fitting 0.56-18 UNF
SPACECRAFT CONNECTION	Brazed Tube .00952 in (.375 in)
MASS (FLIGHT HALF ONLY)	
OTHER SIGNIFICANT CHARACTERISTICS	
Compatible with gaseo etc.	us Nitrogen, Nitrogen Tetroxide, UDMH, Water,

# ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.7 FILL AND VENT VALVE

MANUFACTURER Consolidated Con	strole Corn
MANUFACTURER OURSOLLIGIECE CO.	(20)
PART NUMBER 72855	
PART NUMBER	
PROGRAM	P-50
T NOWINGER TO THE TOTAL PROPERTY OF THE TOTA	
	TICATE
CONTRACTING AGENCY	USAF
PRIME CONTRACTOR	Lockheed Missiles and Space Co., Inc.
STATUS	
QUALIFIED	Yes
FLOWN	Yes The State of t
LAUNCH VEHICLE	Agena
	그런 그 하는 이 흥하는 이 이 작은 이 프로그램을 하고 말았다면.
AVAILABILITY	180 days
AAAT /BRAAHBENENT HNEARMATIAN	<u>5</u> to 10 units - \$2000
COST/PROCUREMENT INFORMATION	
	이번에 있다고 있는 어머니 된다고 말했다. 나는 어느는 그 그릇들에게 아니는

### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.7 VALVE, FILL AND VENT

Column   C	TYPE	Manual Manual	
## RATED FLOW AT DIFFERENTIAL PRESSURE (ACROSS BOTH FLIGHT AND GROUND HALVES IN EITHER DIRFCTION) -  LIQUID		GN <sub>2</sub> or N <sub>2</sub> H <sub>4</sub>	
ACROSS BOTH FLIGHT AND GROUND HALVES   IN EITHER DIRFCTION	DESIGN FLOW MEDIA		
Construction   Cres   Conservation   Cres   Conservation   Construction   Cres   Conservation   Conservation   Cres   Conservation   Conservation   Cres   Conservation   Conservation   Cres   Conservation   Cres   Conservation   Conservation   Cres   Conservation   Conservation   Cres   Conservation   Cres   Conservation   Cres   Conservation   Cres   Cres	(ACROSS BOTH FLIGHT AND GROUND HALVES	equivalent to .012 in (0.5 in) orifice si	z€
SCE   SCE	LICUID	kg/sec OF N/cm <sup>2</sup> ,	°,c
SCFM OF		American and a second s	o <sub>F</sub>
INTEGRAL FILTRATION	GAS		°C
Thieural Filtharion		( SCFM OF PSID,	°F
PRESSURES -         OPERATING         237   N/cm²   ( 345   PSIA)           PROOF         355   N/cm²   ( 515   PSIA)           BURST         234   N/cm²   ( 340   PSIA)           OPERATING TEMPERATURE RANGE         -34to+60   oc   ( -30to140   oc   )           LEAKAGE - INTERNAL         5   scc/hr   OF   GN2   ( 3615   PSIA)           EXTERNAL         .0002   scc/s   OF   GN2   ( 3615   PSIA)           MATERIAL - CONSTRUCTION         Cres           CONNECTIONS - DESCRIPTION OF GROUND HALF         MS Tube Fitting           SPACECRAFT CONNECTION         Brazed Tube	INTEGRAL FILTRATION	200 MICRONS ABSOLUTE	
OPERATING         237   N/cm²   (515   PSIA)           PROOF         355   N/cm²   (515   PSIA)           BURST         234   N/cm²   (340   PSIA)           OPERATING TEMPERATURE RANGE         -34to+60   oc   (-30to140   oc   PSIA)           LEAKAGE - INTERNAL         5   scc/hr of   GN2   (3615   PSIA)           EXTERNAL         .0002   scc/s of   GN2   (3615   PSIA)           MATERIAL - CONSTRUCTION         Cres           CONNECTIONS - DESCRIPTION OF GROUND HALF         MS Tube Fitting           SPACECRAFT CONNECTION         Brazed Tube	LIFE	100 CYCLES	
PROOF	PRESSURES -		
BURST	OPERATING		
OPERATING TEMPERATURE RANGE	PROOF		
Section   Sect	BURST	$\frac{234}{\text{N/cm}^2} \qquad (\underline{340} \text{PSIA})$	
S   SCC/hr OF   GN2   2492   N/cm²	OPERATING TEMPERATURE RANGE	-34to+60 °c $(-30to140  °F)$	
SEAT	LEAKAGE ~	CNI	
SEAT	INTERNAL	5 scc/hr 0F 42 4 2492 N/cm <sup>2</sup>	
MATERIAL -  CONSTRUCTION			
MATERIAL -  CONSTRUCTION	EXTERNAL	.0002 scc/s OF 2492 N/cm <sup>2</sup>	
Cres  SEAT		( <u>3615</u> PSIA)	
Cres  SEAT	MATERIAL -		e Sell,
CONNECTIONS -  DESCRIPTION OF GROUND HALF MS Tube Fitting  SPACECRAFT CONNECTION Brazed Tube		Cres	
DESCRIPTION OF GROUND HALF MS Tube Fitting  SPACECRAFT CONNECTION Brazed Tube		Cres	
DESCRIPTION OF GROUND HALF MS Tube Fitting  SPACECRAFT CONNECTION Brazed Tube			
SPACECRAFT CONNECTION Brazed Tube		MS Tube Fitting	
0.544		Brazed Tube	
MASS (FLIGHT HALF ONLY)	SPACECRAFT CONNECTION	Andrew Commence of the Commenc	
	MASS (FLIGHT HALF ONLY)	kg (lbm)	
THER SIGNIFICANT CHARACTERISTICS FITTING Flow Inlet Fitting -1 .00952 in (.375 in) 2.0 lbm/GN <sub>2</sub> .50-20 UNF  -3 .0190 in (.750 in) 1.0 CFMH <sub>2</sub> O .875-14 UNF	-1 .00952 in (.375	5 in) $2.0 \text{ 1bm/GN}_2$ .50-20 UNF	5

### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.7 FILL AND VENT VALVE

MANUFACTURER Hughes Aircraft	Co. (52)
PART NUMBER 325-7167	
PROGRAM	Intelsat IV A Westar Anik
CONTRACTING AGENCY	Telesat Corp., Western Union, Comsat Corp.
PRIME CONTRACTOR	
STATUS	
	Yes
QUALIFIED	
FLOWN	_Yes
LAUNCH VEHICLE	Atlas Centaur
AVAILABILITY	6 months lead time
	그렇게 하는 이 살 맛이는 살았다. 이 유민들은 그렇게 모양하였다.
COST/PROCUREMENT INFORMATION	\$1400

### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.7 VALVE, FILL AND VENT

TYPE	In-line ball	
DESIGN FLOW MEDIA	N <sub>2</sub> H <sub>4</sub>	
RATED FLOW AT DIFFERENTIAL PRESSURF (ACROSS BOTH FLIGHT AND GROUND HALVES IN EITHER DIRECTION) -		
LIÇUID	kg/sec OF w 20 N/cm <sup>2</sup> ,	
	( <u>.0553</u> lbm/sec OF @ <u>30</u> PSID,	
GAS		_ °c
	( SCFM OF & PSID,	°F)
INTEGRAL FILTRATION	None MICRONS ABSOLUTE	
LIFE	1200 CYCLES	
PRESSURES - OPERATING PROOF BURST		
OPERATING TEMPERATURE RANGE	$-28$ to $76.6 \circ_{c}$ $(-20 \text{ to } ^{170})_{F}$	
	N/cm <sup>2</sup>	
EXTERNAL	$1.4 \times 10^{-5}_{\text{scc/s}}$ OF He $\frac{(}{}$ 355 N/cm <sup>2</sup> $\frac{1.4 \times 10^{-5}}{(}$ PSIA)	
MATERIAL - CONSTRUCTION	Titanium Alloy, 6AL-4V	
SEAT		
CONNECTIONS -  DESCRIPTION OF GROUND HALF  SPACECRAFT CONNECTION	AND 818-4J (1/4")	
Commence of the Commence of th	0.12 kg ( 0.27 lbm)	
THED CLONIE CANT ANADACTED STICS		

## ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.7 FILL AND VENT VALVE

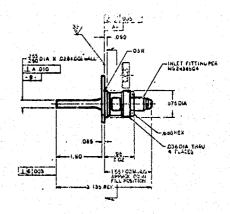
\$ 1.75°	
MANUFACTURER Wright Components	inc.
PART NUMBER 12183	
	MSD
PROGRAM	
CONTRACTING AGENCY	
PRIME CONTRACTOR	Naval Research Labs
STATUS	
QUALIFIED	in process
FLOWN	
LAUNCH VEHICLE	
LAUNON VEIN OBETTI TO THE TENT OF THE TENT	
	special order; 18-24 weeks ARO
AVAILABILITY	
COST/PROCUREMENT INFORMATION	
그렇게 하고 하고 보다 먹는다고	

### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.7 VALVE, FILL AND VENT

TYPE	Manual
DESIGN FLOW MEDIA	Hydrazine
RATED FLOW AT DIFFERENTIAL PRESSURE (ACROSS BOTH FLIGHT AND GROUND HALVES IN EITHER DIRECTION) -	equivalent to 0.156 in diam $C_D = 0.65$
LIQUID	kg/sec OF @ N/cm <sup>2</sup> ,OC
	(
GAS	scc/s OF @N/cm <sup>2</sup> ,OC
	(SCFM OF @PSID,OF)
INTEGRAL FILTRATION	None MICRONS ABSOLUTE
LIFE	250 CYCLES
PRESSURES - OPERATING	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
OPERATING TEMPERATURE RANGE	$-28 \text{ to } 71.\text{Pc}$ $(-20 \text{ to}^{160} \circ_{\text{F}})$
LEAKAGE - INTERNAL	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
SEAT	300 series stainless
CONNECTIONS DESCRIPTION OF GROUND HALF SPACECRAFT CONNECTION	face seal with 4 threaded holes special flange
MASS (FLIGHT HALF ONLY)	0.15 kg ( 0.35 lbm)
OTHER SIGNIFICANT CHARACTERISTICS	

### )ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.7 FILL AND VENT VALVE

MANUFACTURER _	Pyronetics,	Inc. (59)
PART NUMBER _	1831	



PROGRAMVik	ing '75
CONTRACTING AGENCYNAS	A
PRIME CONTRACTOR Max	tin Marietta
STATUS	
QUALIFIEDYes	
LAUNCH VEHICLE	
AVAILABILITY	
COST/PROCUREMENT INFORMATION	

4.2.7-9

## ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.7 VALVE, FILL AND VENT

	In-line, flange mounted, manually operat	ha.
TYPE	In-line, liange mounted, mandally operac	
DESIGN FLOW MEDIA	GHe, GN <sub>2</sub>	
RATED FLOW AT DIFFERENTIAL PRESSURE (ACROSS BOTH FLIGHT AND GROUND HALVES IN EITHER DIRECTION) -		
LIQUID		°F)
GAS	scc/s OF @N/cm <sup>2</sup> , (SCFM OF @PSID,	°C °F)
INTEGRAL FILTRATION	MICRONS ABSOLUTE	
PRESSURES -		
OPERATING PROOF BURST	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
OPERATING TEMPERATURE RANGE	+5to50.5 °c (+41to123 °F)	
LEAKAGE -	1.7X10 <sup>-3</sup> scc/hr 0F He 8 382 N/cm <sup>2</sup> ( 555 PSIA)	
EXTERNAL		
MATERIAL - CONSTRUCTION	304 L CRES	
SEAT		
CONNECTIONS -  DESCRIPTION OF GROUND HALF  SPACECRAFT CONNECTION		
MASS (FLIGHT HALF ONLY)	0.07kg (0.171bm)	

## ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.7 FILL AND VENT VALVE

MANUFACTURER	HTL Industries	, Inc. (	21)			
PART NUMBER	255620-3 255610-2 Groun	255921-3 d Fitting				
				175		
PROGRAM	• • • • • • • • • • • • • • • • • • • •	<u>Vikin</u>	g Orbiter	'75	<del> </del>	· · · · · · · · · · · · · · · · · · ·

CONTRACTING AGENCY	
PRIME CONTRACTOR	Martin Marietta
STATUS QUALIFIED	Yes, by HTL
FLOWN	1975
AVAILABILITY	
COST/PROCUREMENT INFORMATION	

#### ATTITUDE CONTROL PROPULSION COMPONENT DATA SHEET 4.2.7 VALVE, FILL AND VENT

TYPE	Fill and Drain	
· · · · · · · · · · · · · · · · · · ·	GN <sub>2</sub> , MMH, N <sub>2</sub> O <sub>4</sub>	
DESIGN FLOW MEDIA		
RATED FLOW AT DIFFERENTIAL PRESSURE (ACROSS BOTH FLIGHT AND GROUND HALVES		
IN EITHER DIRECTION) -	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	o <sub>C</sub>
FIGURE	( .28 lbm/sec OF H20 75 PSID.	o <sub>E</sub> )
GAS	8.0x10 <sup>3</sup> scc/s 0F GN <sub>2</sub> 17 N/cm <sup>2</sup> ,	°c ′
	( 17 SCFM OF GN2 . 25 PSID,	<sup>o</sup> F)
INTEGRAL FILTRATION	None MICRONS ABSOLUTE	
LIFE	CYCLES	
PRESSURES - OPERATING PROOF BURST	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
OPERATING TEMPERATURE RANGE	$-3.8 \text{ to}$ $^{\circ}_{\circ}_{\circ}$ $(\underline{+25 \text{ to}} ^{\circ}_{F})$	
LEAKAGE -		
EXTERNAL	.005 scc/s OF He (65-4015 PSIA) 44-2768 N/cm <sup>2</sup> Cap or	n1y
	(65-4015 PSIA)	
MATERIAL - CONSTRUCTION		
CONNECTIONS -		
DESCRIPTION OF GROUND HALF  SPACECRAFT CONNECTION	<u>Drawing 255610</u>	
MASS (FLIGHT HALF ONLY)	kg (0.30lbm)	
THER CICNICIONAL CHARACTERISTICS		